

# MARINE REVIEW.

VOL. VII.

CLEVELAND, O., AND CHICAGO, ILL., MAY 4, 1893.

No. 18.

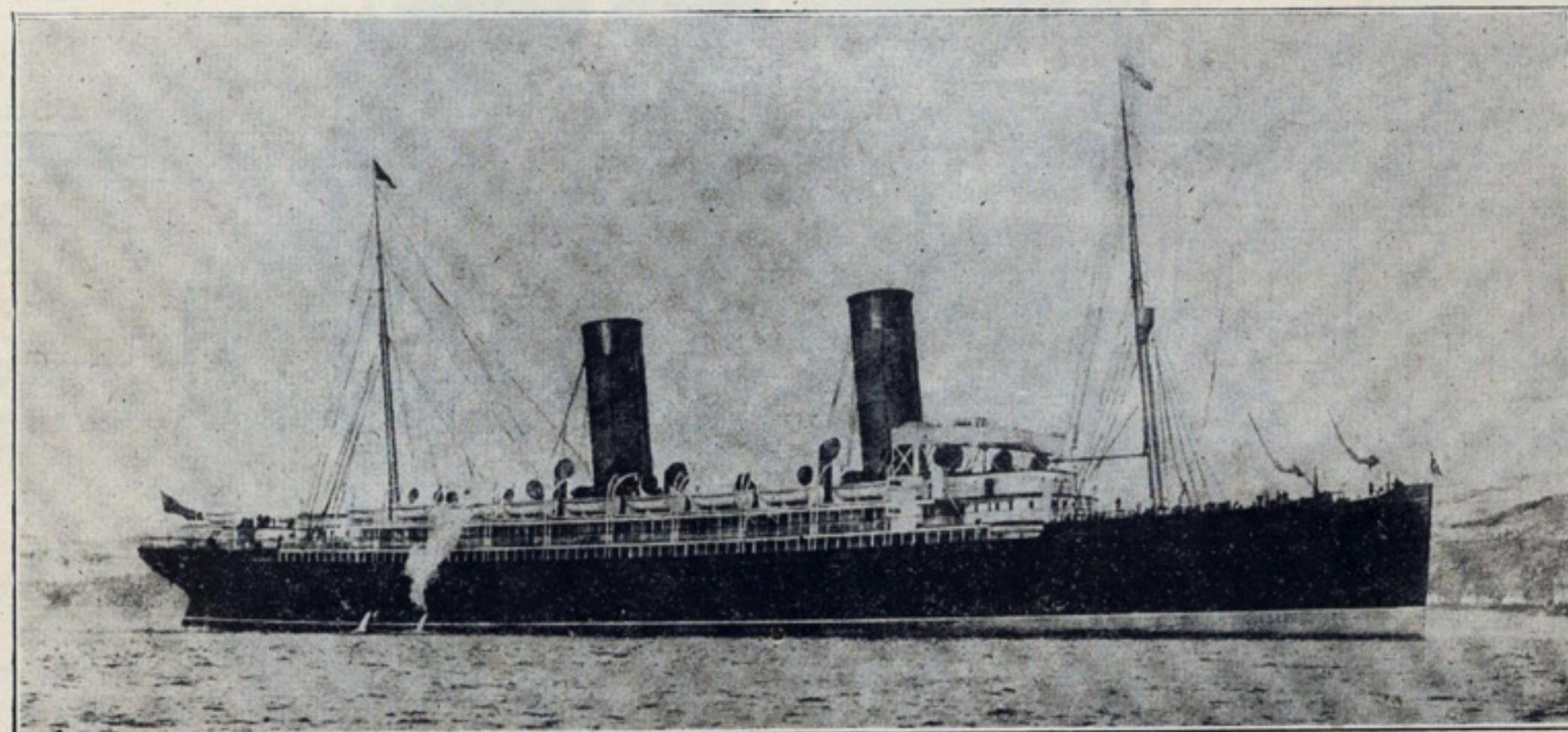
## Ashland Freight Contracts—Ore Sales Market.

Several freight contracts covering ore from Ashland to Ohio ports have been made within the past few days at \$1 a ton. The engagements are not heavy and extend only through the early portion of the season, terminating August 1, but the announcement of any tonnage being placed at this figure will be a surprise in most quarters. Uncertainty as to the opening of the shipping season at Ashland and Two Harbors leaves the question of a rate on single trips from the head of the lakes unsettled, but the first cargoes will, of course, be shipped at a rate about equal to the contract figure. No Escanaba contracts have been made, although the rate on single trips is weak at 60 cents. The Escanaba contract rates now talked of by vessel owners are 85 cents for the full season or 70 cents for May, June and July.

This depression is due entirely, as has been generally understood, to the refusal of the leading steel makers to pay more

will, on this account, require little, if any, tonnage outside of its own boats.

In view of these conditions most vessel owners have decided to take chances on going rates, and ore dealers make the claim that the iron manufacturers, who have refused to pay the prices asked for ore, are bringing upon themselves a state of affairs that will result in an advanced market. The season of active shipments, especially from Lake Superior, will be fully three weeks behind last year, and, in addition to the loss caused on this account, there will be a slow movement of ore, that will cause a rush in the last four or five months of the season, when the railways from Lake Erie ports to the furnaces will find it a physical impossibility to meet the requirements put upon them. This condition will be augmented by the tendency, on account of increased rail rates, to load all ore into cars for immediate shipment.



CUNARD ROYAL MAIL TWIN-SCREW STEAMSHIP CAMPANIA.

than \$3.50 for Bessemer ores, and it is not indicative of any change of policy on the part of either furnace men or ore dealers. Freight rates have been forced by navigation opening in advance of a settlement on prices of ore and with the additional disadvantage of a movement on the part of the mining companies to restrict production.

When it was announced with the close of last week that all, excepting the Aurora, of the Gogebic range mines controlled by the wealthy Wisconsin Central syndicate, in which Joseph L. Colby, Colgate Hoyt and other eastern capitalists are leading stockholders, had been closed down to await a change in the situation, Col. James Pickands of Cleveland made the homely but expressive remark that the management of the properties referred to "had sand," and another leading dealer suggested in a humorous strain that they "were high in silica." The inevitable restriction of the ore output against prices that are considered unreasonable has come, and lake freights will suffer accordingly during the early part of the season, unless the movement of grain, coal and lumber proves greater than the highest anticipations of the vessel owners. It is announced unofficially that the Minnesota Iron Company will not move any of the stock piles of the Minnesota or Chandler mines for the present, and

## Cunard Steamships Campania and Lucania.

Immediately following the great naval display in New York during the closing days of last week, came the announcement of the arrival of the twin-screw steamship Campania, the first of the two new Cunard liners which have been under construction on Clyde since September, 1891, and which represent the highest attainments in naval architecture, the world over. These two vessels, the Campania and Lucania, which will cost together more than three millions, may be accepted as embodying the results of seventy-five years' experience with the steamship. Since both are alike in all respects, it will be enough in describing them to refer only to the Campania, which is the first to make the Atlantic voyage, and which has already shown 23.18 knots or nearly 26 miles an hour in a speed trial. The dimensions of hull and machinery, and other leading features of the boat are as follows:

Hull—Length over all, 622 feet; length between perpendiculars, 600 feet; breadth, extreme, 65 feet 3 inches; depth from upper deck, 41 feet 6 inches; depth from shade deck, 59 feet 6 inches; tonnage, 12,950 tons.

Passenger accommodations—First class, 600; second class,

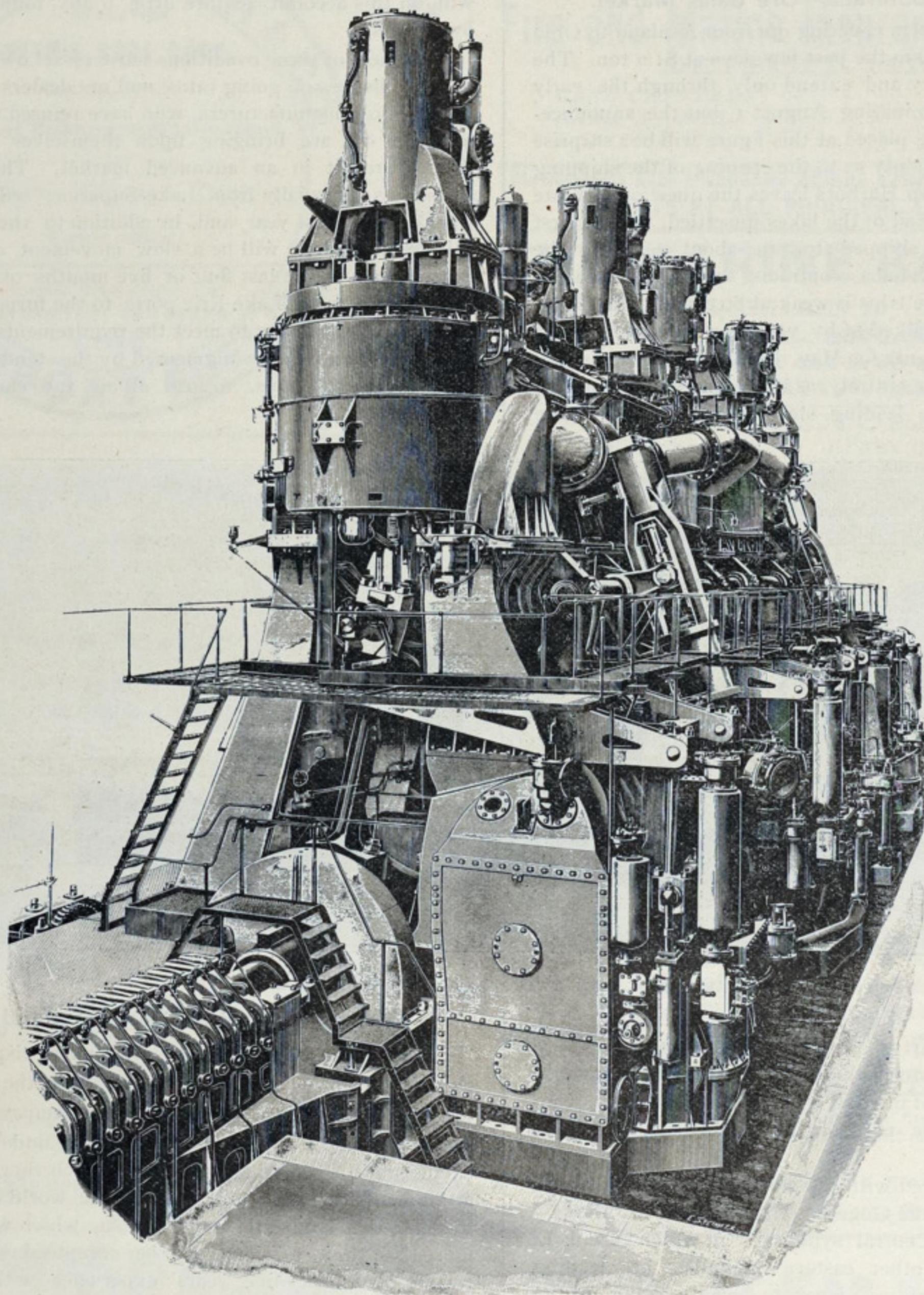
400; third class, 700 to 1,000; crew, 415; cargo-carrying capacity, 1,620 tons.

Engines, twin-screw—High pressure cylinders, four, 37 inches; intermediate cylinders, two, 79 inches; low-pressure, four, 98 inches; stroke, 69 inches.

Boilers—Twelve double-ended, 18 feet diameter by 17 feet long; one single-ended, 18 feet diameter by 11 feet long; one single-ended, 10 feet diameter by 10 feet long; total number of

steward, 105 stewards, 45 cooks, bakers, &c, and 8 stewardesses.

The engines are of a peculiar type designed to reduce the space into which engines of great power may be compressed. If the old-fashioned plan of using three cylinders for triple-expansion had been followed, it was seen that the low-pressure cylinders in a case of 15,000 horse-power would have been greater in diameter than existing machinery could produce with accuracy, or than space could be provided for in the vessels it



ENGINES OF THE STEAMSHIP CAMPANIA.

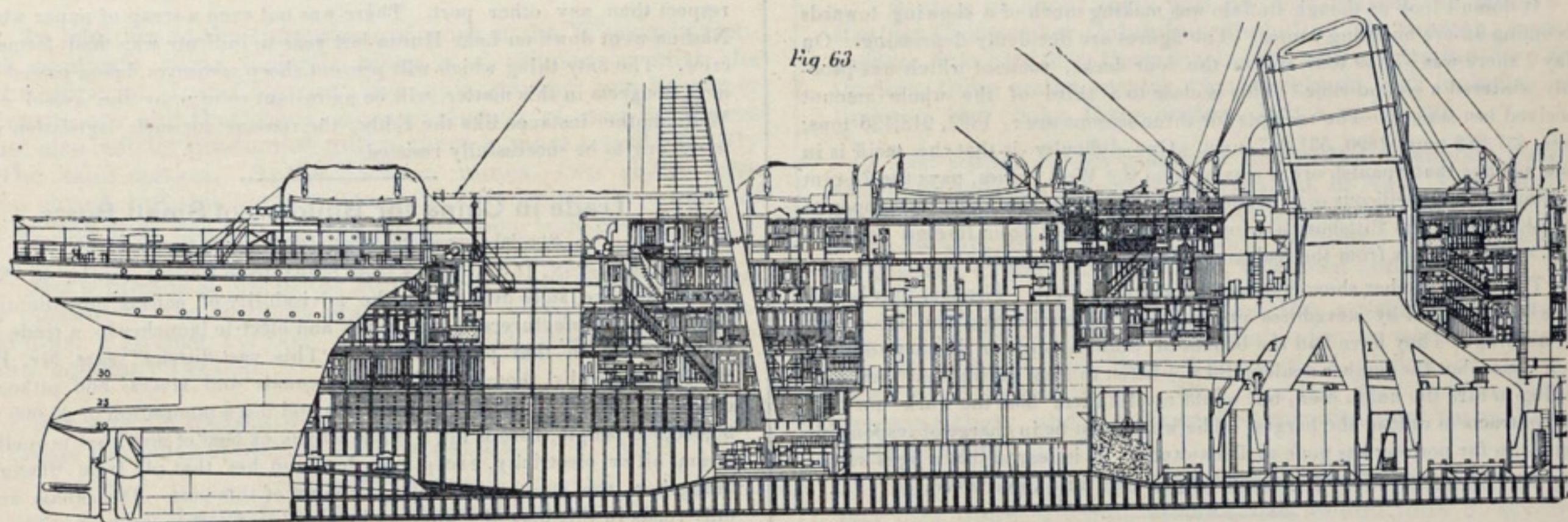
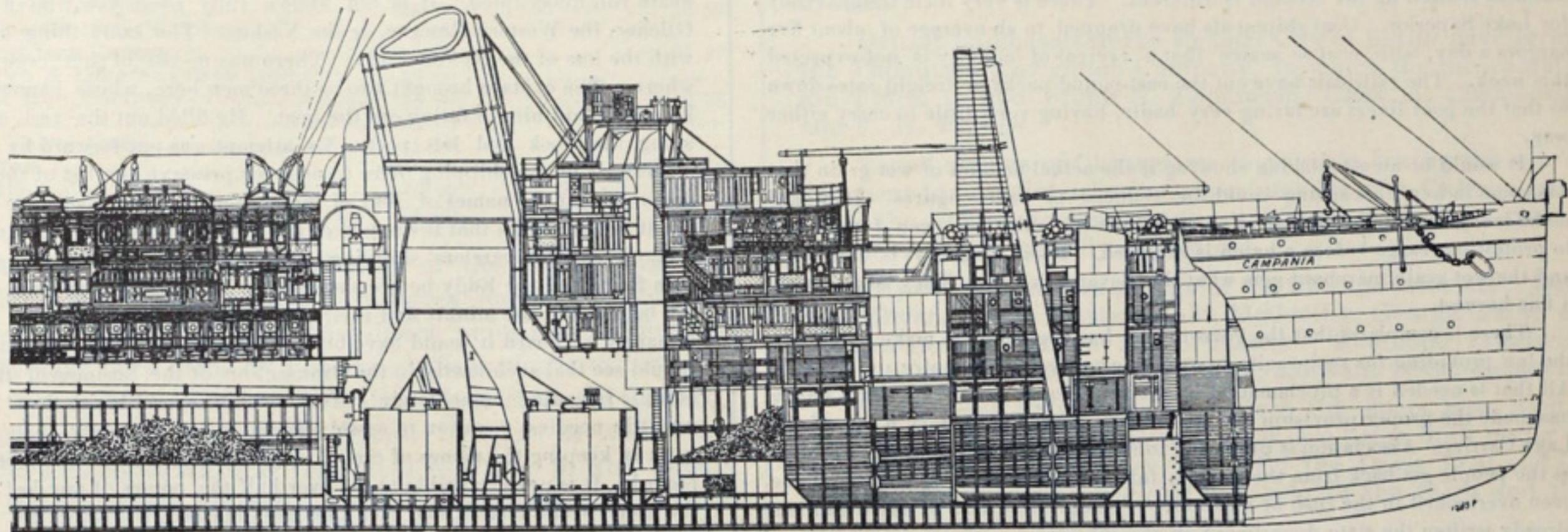
furnaces, 102; working steam pressure, 165 pounds; indicated horse power on sea trial, 31,050.

The crew, which numbers 415 all told, as already noted, is divided into three groups as follows: Sailing department—Commander, 6 officers, purser, surgeon, carpenter and joiner, boatswain and 2 mates, 6 quartermasters, 1 lamp-trimmer and 40 seamen. Engineers' department—One chief engineer, 21 engineers, 2 refrigerating engineers, 1 dock engineer, 8 electricians, 2 storekeepers, 1 "donkey" man, 18 greasers, 9 leading firemen, 75 firemen, and 57 trimmers. Stewards department—One chief

was proposed to drive. The plan adopted, therefore, was to divide both the high-pressure and the low-pressure cylinders into two, to place a small high-pressure cylinder on the top of a low-pressure, and to put the pistons in each case on the same piston-rod and work them tandem fashion. The intermediate cylinder stands alone in the middle of the series, and the piston-rods of each connect with one of the three cranks of the screw shaft. This arrangement got rid of another difficulty. Formerly there appeared from the top of the low-pressure cylinders a guide-rod, designed to prevent the large circumference of the piston in

these large cylinders from wearing unevenly; but, with steam-pressure of over 100 pounds, this guide-rod was a constant source of difficulty. It is by this five-cylinder arrangement entirely superseded. The piston of the high-pressure cylinder acts as a guide-rod for the lower and larger diameter, and the steam is entirely boxed in. The piston, piston-rods, and connecting rods of

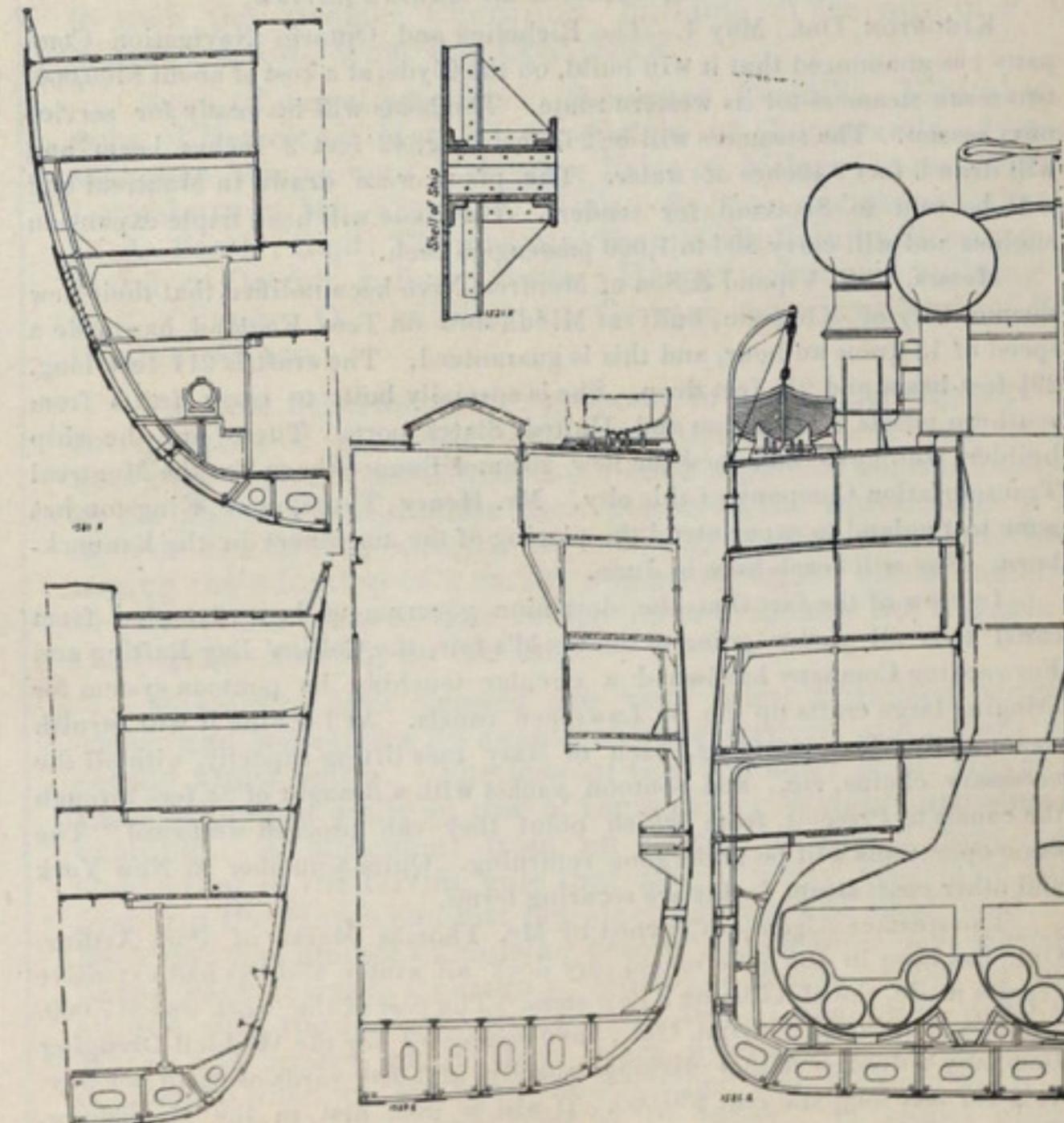
yond an arc of 33 degrees, and when full over she makes a circle of about two-thirds of a mile in diameter. The engravings as well as the greater part of this article are taken from an elaborate edition of the great English journal *Engineering*, date of April 21, which was received with the mails on Tuesday of this week.



SECTIONAL SIDE VIEWS—STEAMSHIP CAMPANIA.

these engines weigh about 120 tons; they have a stroke of 69 inches, and at 81 revolutions—the normal speed of the engines—this enormous weight is moved at a distance of nearly 1,000 feet each minute. The crank-shaft is 26 inches in diameter, and each of the three interchangeable parts weighs twenty-seven tons. These, with the thrust-shaft, 14 feet long, make up a total of 110 tons for each crank-shaft. The propeller-shaft is 24 inches in diameter, and is fitted in lengths of 24 feet, each length having two bearings; and the thrust block is fitted with 14 rings. The propeller, which is placed on the end of the shaft without any interior overhanging bracket, is three bladed, and each blade weighs eight tons, or forty-eight tons in all.

The rudder, with its one large plate of steel 22 feet by 11 feet 6 inches in area and  $1\frac{1}{4}$  inches thick, was rolled at Krupp's, in Germany, in default of a British firm choosing to undertake the job. Connected with the rudder is a novel steam-steering apparatus, which, dispenses with the whole of the chains and connecting-rods associated with the steam steering-engines of the past, and puts an end to the accompanying noises. The engine of this machine travels bodily hither and thither in the same way as an ordinary tiller. It actually balances the rudder by its weight within the body of the ship, and thus reduces the wear of the bearings of the rudder. Motion is given to the steering engine by hydraulic communication actuated from the navigating bridge of the ship through pipes of about half-an-inch in diameter. Owing to the high-speed of the Campania it has not been thought necessary to extend the motion of the rudder be-



SOME FEATURES IN CONSTRUCTION—STEAMSHIP CAMPANIA.

### The Buffalo Grain Fleet.

Special Correspondence to the MARINE REVIEW.

BUFFALO, N. Y., May 4.—The situation here is highly complimentary to Buffalo in regard to taking care of the grain fleet, but decidedly otherwise in most other respects. Close to 10,000,000 bushels of grain was put in store during the last two weeks of April, and the Chicago fleet is now practically here without having to wait for us to any unpleasant extent, but when the up-bound business is sized up the account is different. There is very little freight ready for Lake Superior. Coal shipments have dropped to an average of about five cargoes a day, with coal so scarce that a revival of activity is not expected this week. The railroads have cut the east-bound package freight rates down so that the poor liners are faring very badly, having very little to carry either way.

It would be an astonishing showing if the actual amount of wet grain that has come in here this spring could be reduced to exact figures. It would make many thousand bushels. For some time the rule has been for a vessel to protest her cargo before a hatch is removed. Then a survey is instituted and the wet grain merchant gets what the elevator rejects. They are having a fine harvest.

There is complaint that the government has neglected to make operative the law providing for reciprocity in wrecking between this country and Canada. All that is needed is a proclamation by the president announcing that Canada has made the proper provision and the thing is done. Secretary Keep of the Lake Carriers' Association is preparing to make inquiry at Washington as soon as the people get back from the world's fair, as the matter appears to have been overlooked in the rush of business. Senator McMillan of Michigan has already written the state department on the subject.

It doesn't look as though Buffalo was making much of a showing towards becoming an ore handling center. The figures are decidedly depressing. On May 1 there was 67,469 tons still on the four docks, some of which was probably wintered a second time. This is close to a third of the whole amount received last season. The receipts for three seasons are: 1892, 218,126 tons; 1891, 437,682 tons; 1890, 531,807 tons. One difficulty is that the tariff is in such a shape that Spanish ore comes in from the West Indies, pays the 75-cent duty and still outsells our ores in the eastern markets, the only ones open to Buffalo. Ohio and Pittsburg are too far west to suffer from foreign competition, as the freights from the seaboard are too high for them.

The union lumber shovers do not appear to be in it. The first four barges have been handled by stevedores under police protection and the union men got nothing. They have had the benefit of State Arbitrator Feeney to plead their cause, but the lumber dealers did not listen to him, saying that they were willing to hire the union men, but would not let them boss the work nor take the contracts to unload the barges. The work must be in charge of responsible men. So far nothing has gone to Tonawanda. It is feared that a fight will be the result of carrying the lumbermen's agreement into force there.

### Vessels Building in England for Canadian Service.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., May 4.—The Richelieu and Ontario Navigation Company has announced that it will build, on the Clyde, at a cost of about \$400,000, two screw steamers for its western route. The boats will be ready for service next season. The steamers will be 287 feet long, 42 feet 2 inches beam and will draw 6 feet 9 inches of water. The plans were drawn in Montreal and will be sent to Scotland for tenders. The boats will have triple expansion engines and will carry 800 to 1,000 passengers each.

Messrs. T. S. Vipond & Son of Montreal have been notified that their new steamer City of Kingston, built at Middlesbro on Tees, England, has made a speed of 13 knots an hour, and this is guaranteed. The craft is 214 feet long, 29½ feet beam and 21½ feet deep. She is specially built to carry fruits from southern points to Canadian and United States ports. These are the ship builders who have launched the new steamer Bannockburn for the Montreal Transportation Company of this city. Mr. Henry Thurston of Kingston has gone to England to superintend the placing of the machinery in the Bannockburn. She will reach here in June.

In view of the fact that the dominion government has exempted from canal tolls all yachts going to the world's fair, the Collins' Bay Rafting and Forwarding Company has issued a circular touching its pontoon system for bringing large crafts up the St. Lawrence canals. At Lachine it will furnish steam cylindrical pontoons, each of sixty tons lifting capacity, with all the necessary chains, etc., and pontoon yachts with a draught of 8½ feet through the canals to Prescott, from which point they can proceed westward. The same operations will be undergone returning. Quite a number of New York and other coast steam yachts are securing terms.

The steamer Algonquin, owned by Mr. Thomas Marks of Port Arthur, Ont., has been in the government dry dock all winter and has had extensive repairs made, the chief being a new stem. The cost of the work was \$17,000.

Beatty & Sons, Welland, Ont., have completed for the Weddell Dredging Company a dredge with a digging capacity of 3,000 yards of earth per day. It is 107 feet long and cost \$30,000. It will be used first in the Morrisburg, Ont., canal.

### Preserve the Names of Crews.

Special Correspondence to the MARINE REVIEW.

CHICAGO, Ill., May 4.—It does seem as if it were time that a better system for preserving the names of crews that ship on lake vessels should be adopted. In all the big disasters of last year it was quite impossible to get the list of the dead until days afterward, and even then the lists were incorrect, people being reported lost who were still alive, leaving their places on the death roll unoccupied. It is not known fully even yet who were on the Gilcher, the Western Reserve, or the Nashua. The same thing comes again with the loss of the Newell Eddy. There was no list of her crew kept anywhere. The captain brought two or three men here, whose names are yet unknown, to aid him in fitting out the boat. He filled out the rest of his crew along the dock and left port. No attempt was put forward by him, by the owners, or by the shipping office to make or preserve any list of the schooner's crew. So far the names of four of the nine men on the boat have been given, but it is not certain that the names of any, except that of the captain, are correct. The lake carriers' shipping office here could not give the names of the men furnished the Eddy before she sailed. It is said that some of them left the boat at the last minute and their places were filled by others. If they had remained on board it would have been just the same. The association officers should see that such laxity in the transaction of the business of the shipping office is remedied immediately. Nothing will cause legislation, which will result in needless vexation to vessel owners, more certainly than such loose work in keeping the names of crews. The Seaman's Union is no better in this regard. It is never possible to get over half the names of any lost crew from the union headquarters, and then they are obtained, not from the books, but from memory of the lost sailors' friends. Nor is Chicago any worse off in this respect than any other port. There was not even a scrap of paper when the Nashua went down on Lake Huron last year to indicate who had formed her crew. The only thing which will prevent sharp measures being passed by the next Congress in this matter, will be an instant reform by the vessel owners. With another instance like the Eddy, the reasons for such legislation will be too strong to be successfully resisted.

### Trade in China for Builders of Small Boats.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D. C., May 4.—A letter from Consul Fowler at Ningpo urges upon the state department the advisability of calling the attention of American manufacturers of steam, oil and electric launches to a trade that is open to them in that part of China. "This vast district" says Mr. Fowler "is intersected by thousands of miles of canals and rivers, and although it covers a territory of 39,500 square miles and has a population of 25,000,000 to 35,000,000 people, there is not a single launch or boat of any kind propelled by steam, oil or electricity, excepting a few launches that ply from Shanghai to Hangchow, the capital, 150 miles northeast of this port. The canals are the only roads in this part of China, and travel is, of course, by boat. The traffic carried on by boats, which are propelled by "ya lows" (large oars) is very large. I have been discussing the benefits of small launches with the Taotai for the past two years, and now he has requested me to find out all I can for him. If he should adopt a launch for his own use, I am quite confident that it will not be long before many orders will be placed with our manufacturers."

### Record of Speed and Big Cargoes.

[*Masters or owners of freight boats are invited to report improvements on this list.*]

Iron ore: Maritana, Minnesota Steamship Company of Cleveland, 4,260 gross or 4,771 net tons, Escanaba to South Chicago; Maryland, Inter-Ocean Transportation Company of Milwaukee, 3,663 gross or 4,103 net tons, Escanaba to South Chicago, draft 17 feet 4 inches.

Grain: Selwyn Eddy, Eddy Transportation Company of Bay City, 139,820 bushels of wheat, Detroit to Buffalo; E. C. Pope, Eddy Transportation Company of Bay City, 125,730 bushels of corn, Chicago to Buffalo; Onoko, Minch estate, Cleveland, 187,657 bushels of oats, Chicago to Buffalo.

Coal: E. C. Pope, Eddy Bros. of Bay City, 3,950 net tons anthracite, Buffalo to Chicago.

### Official Numbers and Tonnage.

The bureau of navigation, E. C. O'Brien commissioner, assigned official numbers and tonnage to the following lake vessels during two weeks ending April 29: Steam—Christopher Columbus, Marquette, Mich., 1,550.21 tons gross, 945.11 net, No. 126,952; Arthur Orr, Chicago, Ill., 2,329 tons gross, 1,972.83 net, No. 107,006; S. S. Curry, Cleveland, O., 3,260.01 tons gross, 2,608.24 net, No. 116,558; Vega, Cleveland, O., 2,143.59 tons gross, 1,734.82 net, No. 161,706; Theora, Marquette, Mich., 24.08 tons, 12.04 net, No. 145,640. Sail—Interlaken, Port Huron, Mich., 567.18 tons gross, 538.83 net, No. 100,554; Dundee, Port Huron, Mich., 1,043.87 tons gross, 991.68 net, No. 157,366; Paisley, Port Huron, Mich., 1,046.63 tons gross, 994.30 net, No. 150,621; Mingoe, Toledo, O., 712.75 tons gross, 681.95 net, No. 92,508; H. A. Barr, Cleveland, O., 1,119.59 tons gross, 1,063.62 net, No. 96,218. Unrigged—Barges Nos. 131, 132, 133 and 134 all of Buffalo, each 1,310.82 tons gross and 1,265.92 net, and numbered respectively 53,278, 53,279, 53,280 and 53,281.

## Iron Mining.

## VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter &amp; Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$ 56 00	\$.....
Champion Iron Company.....	25 00	28 00	.....
Chandler Iron Company.....	25 00	.....	39 00
Jackson Iron Company.....	25 00	.....	38 50
Lake Superior Iron Company.....	25 00	31 00	.....
Minnesota Iron Company.....	100 00	.....	64 50
Pittsburgh & Lake Angeline Iron Co....	25 00	.....	.....
Republic Iron Company.....	25 00	.....	9 75
Ashland .....	25 00	.....	.....
Section Thirty-three.....	25 00	1 00	.....
Brotherton.....	25 00	2 00	2 50
Iron Belt.....	25 00	2 40	2 75
Aurora.....	25 00	6 50	7 00

There is very probably some truth in the rumors that the Schlesinger syndicate is acquiring furnaces for the smelting of a portion of its ore. Although no direct purchases of furnace property have been made by Ferdinand Schlesinger or his associates, it is understood that Forsythe, Hyde & Co. of Chicago, who have recently purchased several furnaces in Wisconsin, Ohio and Pennsylvania, bear very close relations to the syndicate. Mining stocks are even less active than they have been for some time past and there are no announcements of dividends.

In addition to the suspension of work at the Wisconsin Central syndicate ruins, Gogebic range, it is announced that the Lake superior Iron Company has quit mining non-Bessemer hematite ore and that other large producers of non-Bessemers must also restrict production unless there is more activity shortly in the sales market. At the Jackson mines, two shafts have been closed, but this move is not of importance as the supply of ore at this mine has been giving out for some time past.

Stock piles at a few of the Menominee range properties upon the opening of the shipping season were: Commonwealth 106,000 tons, Florence 151,000, Aragon 72,000, Mastodon 22,000, Penn. company 135,000.

Wisconsin's legislature refused to establish a mining school or create the office of state mining inspector.

## Launch of the Bannockburn.

Sir Rayton Dixon & Co., of Middlesbro on Tees, England, send us a report of the launching of the steel screw steamer which they are building for the Montreal Transportation Company, of Kingston, Ont. They say of the new vessel: "Her principal dimensions are 254 feet length, 40 feet beam and 21 feet 4 inches moulded depth, with a deadweight carrying capacity of over 2,700 tons. She has been built under special survey for Lloyds highest class. Engines will be fitted by the North Eastern Marine Engineering Company Limited, of Wallsend on Tyne, the cylinders being 21, 34, and 56 inches by 39 inches stroke, with two large boilers working at a pressure of 160 pounds per square inch. This steamer has an unbroken deck, with the exception of a top gallant forecastle for the accommodation of the crew, and a sunk poop aft, handsomely fitted up for the accommodation of the officers and passengers. She has been constructed specially for trading on the great lakes of North America, and in order to get the vessel on her station she will require to pass locks on the St. Lawrence, which are much too short for her length. Efficient provision has therefore been made for cutting the steamer in two portions, each of which will float at a suitable draft, and after these obstacles to navigation have been passed she will be again riveted together. She is rigged as a three-masted schooner and has a large number of handy hatches to fit her for special trade. She has been built under the superintendence of Capt. McMaugh of St. Catherines, Ont. As the steamer was leaving the ways she was named the Bannockburn by Miss Keith Glenn of Greenock."

R. J. P. Newcomb, of Manistee, Mich., will build the new life saving station at Milwaukee for \$11,324.

## Around the Lakes.

Latest reports from the St. Mary's Falls canal recommend a draft of 13 feet 8 inches.

Captain Charles M. Davis of the steamer R. P. Flower has been appointed inspector of the Commercial Union Insurance Company. Captain Frank Van Patten takes command of the Flower.

Detroit purchasers of the steamer City of Berlin have formed the Thompson Navigation Company, in which the incorporators are Frank L. and Frank N. Thompson, Chas. A. Chamberlain and R. H. Philips.

Vessel owners of Chicago are justified in asking the war department to appoint a harbor superintendent for Chicago river. Since the federal government has taken charge of the river its authority should be fully carried out.

City officials now in charge of the Chicago river are: James B. Sullivan, harbor master; John McCarthy, George Paine and Charles Dorow, assistant harbor masters; Redmond Prindiville, vessel dispatcher; William J. Fagan, assistant vessel dispatcher.

Three small light-ships, to replace the floats now used to mark the Lime-kilns cut, Detroit river, are being built under the direction of the light-house board by the Davis Boat and Oar Company of Detroit. The cost is \$2,980 for the three and they are to be completed about May 11.

A crew of about forty will be required on the world's fair steamer Christopher Columbus, including six firemen, two coal passers, two greasers, three engineers, one electrician, two water tenders, three mates, master, two wheelmen, two lookouts, eight linemen, two cooks, three porters, lady's maids, etc.

The United States Standard Steamship Owners', Builders' and Underwriters' Association, Limited, of New York has just classed in the "Red Book" the Lehigh Valley steamers Tuscarora, Saranac, Seneca, Cayuga, E. P. Wilbur, Fred Mercur, H. E. Packer, Clyde, R. A. Packer, Oceanica and Tacoma.

Notwithstanding the efforts of the vessel owners early in the spring, funds will not be available for the work of straightening and widening the bend known as Collision bend, in the Sault river, before July 1. Gen. Poe has reported in favor of dredging there, and has forwarded specifications for making the improvement.

Mark Hopkins of St. Clair, Mich., F. W. Wheeler of West Bay City, John Mitchell, James Corrigan and John F. Wedow of Cleveland and Capt. John Green of Buffalo are all named as stockholders in the new Hopkins Steamship Company, which is to own the steamer Centurion, building at the yard of F. W. Wheeler & Co., West Bay City, Mich.

Sales of vessel property: Schooner Unadilla, Whitaker & Sons of Detroit to Capt. W. G. Petrie of Tonawanda, \$9,000; schooner Atmosphere, Valentine Fries of Milan, O., to Wolf & Longsbury of Mt. Clemens, Mich., \$4,000; excursion steamer L. A. Scott, Capt. Thomas Maytham of Buffalo to Stevenson & Marsh of Detroit, private terms: Harper schooner building at Port Clinton, O., builders to German-American bank of Port Clinton, \$1,100.

Fairport fishermen who propose to use carrier pigeons for the purpose of receiving messages from boats sent out to lift nets may derive some benefit from such a plan of communication as the pigeons would make their homes in the warehouses or offices of the fishing companies, but the writers who have been urging the adoption of a carrier pigeon system of communication in case of accidents to lake vessels have evidently not thought of the pigeons staying by the ship.

Masters of lake vessels are very often criticised without cause, and sometimes by agents of underwriters and others who should know better. The loss of the schooner R. B. Hayes on Lake Michigan while in tow of the steamer Wright furnishes an example. A statement from an officer of one of these boats shows that in the terrific gale that caught many vessels on their first trip the Hayes had lost her steering gear and small boat, and her crew was almost exhausted before the steamer was signaled to put back towards Chicago. When the steamer tried to turn around with the tow, the line parted, and it was not until the Hayes had broken adrift three times afterward that the captain decided to abandon his boat, and reached the steamer with his crew by jumping from one boat to the other. It seems almost miraculous that the entire crew was saved in this way.

## MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Chicago Office, Western Union Building, 110 LaSalle Street.  
Published every Thursday at No. 516 Perry-Payne Building, Cleveland, O.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,657 vessels, of 1,183,582.55 gross tons register in the lake trade. In classification of this fleet the lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1892, was 321 and their aggregate gross tonnage 534,490.27; in all other parts of the country the number of this class of vessels was, on the same date, 217 and their gross tonnage 321,784.64. The classification of the entire lake fleet is as follows:

Class.	Number.	Tonnage.
Steam vessels .....	1,631	763,063.32
Sailing vessels.....	1,226	319,617.61
Canal boats.....	731	75,580.50
Barges.....	69	25,321.12
Total.....	3,657	1,183,582.55

Tonnage built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

No. of boats.	Net Tonnage.
1888.....	222
1889.....	225
1890.....	218
1891.....	204
1892.....	169
Total.....	1,038

### ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1892.	1891.	1890.	1892.	1891.	1890.
No. vessel passages	12,580	10,191	10,557	3,559	4,207	3,389
Ton'ge, net regist'd	10,647,203	8,400,685	8,454,435	7,712,028	8,698,777	6,890,014
Days of navigation..	223	225	228	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

AFTER all the fuss made during the past winter about the loss of two steel vessels last season, the general agents of insurance companies doing business on the lakes have not made a particle of change from previous seasons in any of their methods and have even cut the hull tariff upon which the bulk of last season's business was taken. It may not be generally known, but it is nevertheless a fact, that insurance on the big fleet of vessels controlled by J. C. Gilchrist of Cleveland was taken, just previous to the storm that marked the opening of navigation, by a pool of underwriters, made up of one Buffalo and three Chicago houses, at rates that make premiums on the best vessels of the fleet about 25 per cent. lower than they would be under the full tariff. The cut on these boats would have caused a general slashing of rates but for the early gales that caused the underwriters to move cautiously and order a strict maintenance of the tariff, although they were prompted to act differently. A war of this kind among the general agents is, of course, beneficial to the vessel interests, but it is suggestive nevertheless of the change that must eventually come in the present system of dealings between the lake vessel owner and the company that takes a risk on his vessel. In the case of the fleet referred to, commissions were probably reduced at some end, but however this may be, it is certainly an expensive system of insurance that will allow agents to cut premiums 25 per cent. in some cases and still make money for the companies which they represent. There is no reason why this insurance can not be placed more directly than as at present through general and local agents, whose commissions under a tariff made up by themselves are enormous when such tariffs are upheld. If these tariffs are upheld in one season and cut during another it is the insured that suffers in all cases from uncertainty in rates as well as the general run of high charges. It is evident, however, that in placing the most important risks the time is not far off when dealings with the

companies and with individual foreign underwriters will be more direct. A late announcement from England is to the effect that Harry J. Cornish and Samuel J. P. Thearle, surveyors for Lloyds Register who recently visited this country, will soon succeed John Congdon of New York in charge of the affairs of the British register here, as Mr. Congdon has about reached the period of retirement. The classification of lake vessels at Lloyds will cause more active competition for high class risks, and as the Bureau Veritas, American Shipmasters' Association and other classification societies are already engaged in this work of superintending construction and furnishing underwriters in all parts of the world with assurance of the quality of lake vessels, it is only a matter of a little more time until the companies represented by the general agents who have long been in control of the lake business must meet this competition. They can only do so by cutting down the heavy expense and commission charges involved in the system as at present conducted through numerous general and local agents.

REFERRING to the question of amending the Canadian customs law so as to enable vessels bought outside the dominion to be registered in Canada duty free, which will doubtless be brought to the attention of parliament next session, when the government's tariff reform measure comes down, the Canadian Manufacturer says: "If any such law is passed it would mean the closing down of Canadian ship yards, and the transference of the Canadian ship building industry to American lake ports. Cleveland, Buffalo, Detroit and Bay City would at once enlarge their ship building facilities so as to supply the Canadian demand." Unfortunately for the Dominion, she has practically no ship building industry to destroy. Canada's merchant marine has varied barely 100 tons each year in the past ten years. The few steel boats that have of late years replaced lost tonnage have either been built in England, or in the United States and from this country registered in New Foundland to avoid the duty. American lake builders would not object to building vessels for Canadian owners, but the question of free ships in Canada will not be of much importance to them unless a change in the tariff policy of the dominion brings about a revival in shipping.

THE total amount of shipping tonnage entered at American seaports from foreign countries for the year ending June 30, 1892, was 18,180,480, of which 14,433,829 was foreign and 3,747,651 was American. This is about 6,000,000 tons more than the freight tonnage of the St. Mary's Falls canal during 225 days of navigation in 1892, but it is full 3,500,000 tons less than the freight tonnage passing through the Detroit river in a single season, the latter amounting to 22,000,000 tons in 1891, according to latest reports from the bureau of statistics, treasury department.

LAST week the general government, through Major Gregory, corps of engineers, U. S. A., assumed control of the Sturgeon bay ship canal and thus the last highway of commerce on the lakes within the territory of the United States is made free of tolls. Canada with its liberal spirit toward canals, will soon follow this example, and would have undoubtedly done so long ago were it not for the heavy debts otherwise undertaken in fostering internal commerce.

Owing to the publication of the illustrations and description of the Cunarder Campania in this issue, the installment of the McDougall's patents articles had to be omitted. The attention of our readers is called to the REVIEW's enterprise in reproducing this matter in just two weeks after its publication in London, and in less than a week from the time the Campania came into New York harbor for the first time.

A correspondent at Sault Ste. Marie informs us that the first boat to arrive at the Sault, April 29, was the tug Merrick at 1:31 p. m., the second the City of Midland at 4 p. m., and the Minnie was third, passing at 8 p. m.

### Merchant Marine of the United States.

Again the report of the United States commissioner of navigation shows that the tonnage of lake vessels represents about one-third of the entire merchant marine of the country, and that there is owned on the lakes more vessels of 1,000 to 2,500 tons than in all other parts of the country combined. The statistics prepared by this bureau of the treasury department show each year that the increase in the lake fleet is made up of the finest class of vessels as a whole, that are to be found in this or any other country. Following is a table showing the entire merchant marine of the United States:

GRAND DIVISIONS.	Steam Vessels.		Sail and Unrigg'd		Total, all classes.
	No.	Gross Tons	No.	Gross Tons	
Northern Lakes	1,631	763,063.32	2,026	420,519.23	3,657 1,183,582.55
Atlantic and Gulf coasts	3,039	901,886.92	14,852	1,904,029.37	17,891 2,805,916.29
Pacific coast	600	202,466.01	945	252,153.67	1,545 464,619.68
Western rivers	1,112	207,000.69	168	103,801.99	1,290 310,802.68
Total	6,392	2,074,416.94	17,991	2,690,504.26	24,383 4,764,921.20

The foregoing table does not include boats and lighters, decked and not masted, employed within the harbor of any town or city, or canal boats and barges, without sails or internal motive power of their own, employed wholly upon canals or the internal waters of a state, or barges or boats plying on rivers or lakes of the United States and not engaged in trade with contiguous foreign territory, and not carrying passengers, or boats under 5 tons net.

### MERCHANT VESSELS OF THE UNITED STATES OF 1,000 TO 2,500 TONS.

GRAND DIVISIONS.	June 30, 1892.		June 30, 1891.		Increase.	
	No.	Gross Tons	No.	Gross Tons	No.	Gross Tons
Northern lakes	321	534,490.27	310	512,787.58	11	21,702.69
Atlantic and Gulf coasts	167	251,209.68	164	250,732.26	3	477.42
Pacific coast	29	43,796.43	28	42,312.54	1	1,483.69
Western rivers	21	26,778.53	21	26,706.04	...	*72.49
Total	538	856,274.91	523	832,538.42	15	23,736.49

It is only about seven years since the first steel freight vessel was launched on the lakes, and yet the steel tonnage now owned here is about one-third of the entire country, as shown by the following table:

### STEEL AND IRON VESSELS OWNED IN THE UNITED STATES.

GRAND DIVISIONS.	Steam.		Sail and unrigg'd		Total.
	No.	Gross Tons	No.	Gross Tons	
Northern lakes	127	193,458.27	13	14,347.51	140 207,805.78
Atlantic and Gulf coasts	536	485,981.00	13	14,945.23	549 500,926.23
Pacific coast	42	71,578.07	1	997.35	43 72,575.42
Western rivers	30	5,101.21	...	...	30 5,101.21
Total	735	756,118.55	27	30,290.09	762 786,408.64

The following table shows vessels of all kinds, wood and metal, built in the different districts during the fiscal year ending June 30, 1892:

### VESSELS OF ALL KINDS BUILT IN THE UNITED STATES IN 1892.

DISTRICTS.	Steam Vessels.		Sail and unrigged.		Total all classes.
	No.	Gross tons.	No.	Gross tons.	
Northern lakes	93	34,129.20	76	11,839.78	169 45,968.98
Atlantic and Gulf coasts	207	35,980.50	781	82,113.12	988 118,093.62
Pacific	49	9,930.80	90	10,830.13	139 20,769.93
Western rivers	89	12,881.57	10	2,318.95	99 14,800.52
Grand total	438	92,531.07	957	107,101.98	1395 199,633.05

The vessels of all classes built in the United States during the past four years, apportioned in respect to the several grand divisions of the country, are shown, with their tonnage, in the table below:

### VESSELS OF ALL CLASSES BUILT DURING THE PAST FOUR YEARS.

GRAND DIVISIONS.	1889.		1890.		1891.		1892.	
	No.	Gross tons.						
Northern lakes	225	107,080	191	108,525	204	111,856	169	118,095
Atlantic and Gulf coast	657	93,913	663	156,755	944	218,392	988	45,968
Pacific	112	17,940	93	12,335	122	19,070	139	20,770
Western rivers	83	12,202	104	16,506	114	19,984	99	14,800
Total	1077	241,134	1051	194,122	1384	369,302	1395	199,633

### My Daughter.

There came to port last Sunday night  
The queerest little craft,  
Without an inch of rigging on;  
I looked and looked, and laughed.  
  
It seemed so curious that she  
Should cross the unknown water,  
And moor herself right in my room;  
My daughter, Oh, my daughter!  
  
She has no manifest but this,  
No flag floats o'er the water,

She's too new for the British Lloyds—  
My daughter, Oh, my daughter.  
Ring out wild bells and tame ones too!  
Ring out the lovers' moon!  
Ring in the little worsted socks!  
Ring in the bib and spoon!  
Ring out the muse! Ring in the nurse!  
Ring in the milk and water!  
Away with paper, pen and ink—  
My daughter, Oh my daughter.  
—[G. W. Cable.

### Publications.

We have received from Joseph R. Oldham, Cleveland, a book called the "Great Lakes Register of Shipping." In addition to a complete list of steel and composite vessels on the lakes, which, including those under construction, number 171, of 312,-574 gross tons register, the book contains rules and tables of scantlings for the construction of steel ships. The list of steel and composite vessels is valuable, as the boats are arranged according to names of managing owners, and the data regarding tonnage, dimensions, boilers, engines, etc., will prove handy for ship builders, owners and others. The rules were gotten up with a view to interesting owners in the formation of an association, in which they were to be adopted, but the scheme fell through. The book is for sale.

The twenty-fifth annual report of the Sailors' Floating Bethel Society, Cleveland, O., has been received from Rev. J. D. Jones, chaplain and superintendent. From the work reported, it is quite evident that those who wish to help the sailors who drift here from all parts of the world can find no better means than contributions to this society. It receives the support and personal endorsement of such well known marine business men as Capt. Thos. Wilson, Capt. Geo. Stone, W. D. Rees, H. F. Lyman and others. The report is not given up to figures and statements, but contains some very interesting life stories, the most wonderful being that of the chaplain.

Beeson's Inland Marine Guide is published in a handsome blue cover this year, stamped in gold. It contains the names of documented lake vessels and a classified directory of lake business concerns. It is a much larger book than previously published, and on account of its expensive binding the price is placed at \$5. Orders sent to the MARINE REVIEW will be promptly filled.

### Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on April 29, 1893:

	Wheat, bu.	Corn, bu.
Chicago	18,602,000	3,428,000
Duluth	16,898,000	341,000
Milwaukee	1,697,000	11,000
Detroit	1,510,000	5,000
Toledo	3,388,000	966,000
Buffalo	3,978,000	1,076,000
Total	46,073,000	5,827,000

At the points named there is a net increase for the week of 1,660,000 bushels of wheat and a decrease of 139,000 bushels of corn. In addition to the above stocks, there was afloat in lake vessels at Duluth 571,000 bushels of wheat.

### Ship Yard Notes.

One of the tugs building at the yard of the Union Dry Dock Company, Buffalo, for the V. O. T. company of Cleveland will probably be launched this week.

F. W. Wheeler & Co. of West Bay City launched the big steamer S. S. Curry last week and in a few days will float the steel steamer Merida, building for Whitney and others of Detroit.

The new lumber steamer building at Marine City for Hurd & Hanenstein of Buffalo will be called the Wotan, after a character in one of Wagner's operas. She is to be ready for business some time this week.

At Davidson's yard, West Bay City, the schooner City of Dundee was launched on Friday last and the schooner H. A. Barr on Wednesday of this week. The Barr is for W. C. Richardson and others of Cleveland and is one of the best consorts on the lakes.

The Detroit Dry Dock Company has the second of the big Detroit & Cleveland line passenger steamers, the City of Mackinac, in the water. This boat, which is intended for service between Detroit and Macinac, is a duplicate of the City of Alpena, launched some time ago and described in the REVIEW of March 16.

**Subscribers will avoid danger of mistakes by giving the old as well as the new address when a change is desired.**

## In General.

Table service of silver and glassware, including necessary toilet requisites for W.K.Vanderbilt's new yacht, will cost \$150,000.

Leading stockholders of the Fulton Iron Works of San Francisco are preparing for the establishment of a ship building establishment, which it is claimed will be as large as the Union Iron Works of that city.

The total marine premiums of the Atlantic Mutual Marine Insurance Company of New York for the past year were \$5,162,933, and the losses paid during the year were \$1,466,178. The assets of the company aggregate \$12,485,685.

William A. Rockefeller of New York, one of the leading spirits in the Standard Oil Company, contemplates letting a contract for a new yacht. He is satisfied that he can get a suitable vessel in this country and has been figuring with the Cramps.

Lloyd's latest returns show the total number of vessels in the British mercantile marine to be 21,542, having an aggregate tonnage of 12,203,761 tons. Of this number 7,960 are steamers with 8,980,203 gross tons, or an average of considerably over 1,000 tons each. In 1892 England added 872 vessels of 984,670 tons to her merchant service.

Messrs. William Doxford & Sons of Sunderland, England, patentees of the type of vessel known as a turret steamer, are so well satisfied with the success of the first boat, which has just made an Atlantic voyage, that they are about to construct a second of those vessels of larger dimensions than the one owned by Messrs. Peterson, Tate & Co. of Newcastle-on-Tyne.

Joseph McGill, ship builder of Shelburne, N. S., is building for an Englishman a yacht with a lead keel. The keel, which was cast a few days ago, contains twelve tons of lead, and will be secured to the hull of the yacht by heavy metal screw bolts. The craft was designed by Stewart & Binney of Boston, successors of the late Edward Burgess.

The largest steamer for purely cargo purposes yet built on the Clyde was launched a short time ago from the works of Messrs. Alex. Stephen & Sons, Linthouse, Glasgow. She is of about 5,000 tons gross register. Her dimensions are: Length, 400 feet; breadth, 48 feet; depth, moulded, 31½ feet. The engines, also constructed by Messrs. Stephen, are of the triple expansion type, having cylinders 26, 41 and 67 inches diameter by

1880.

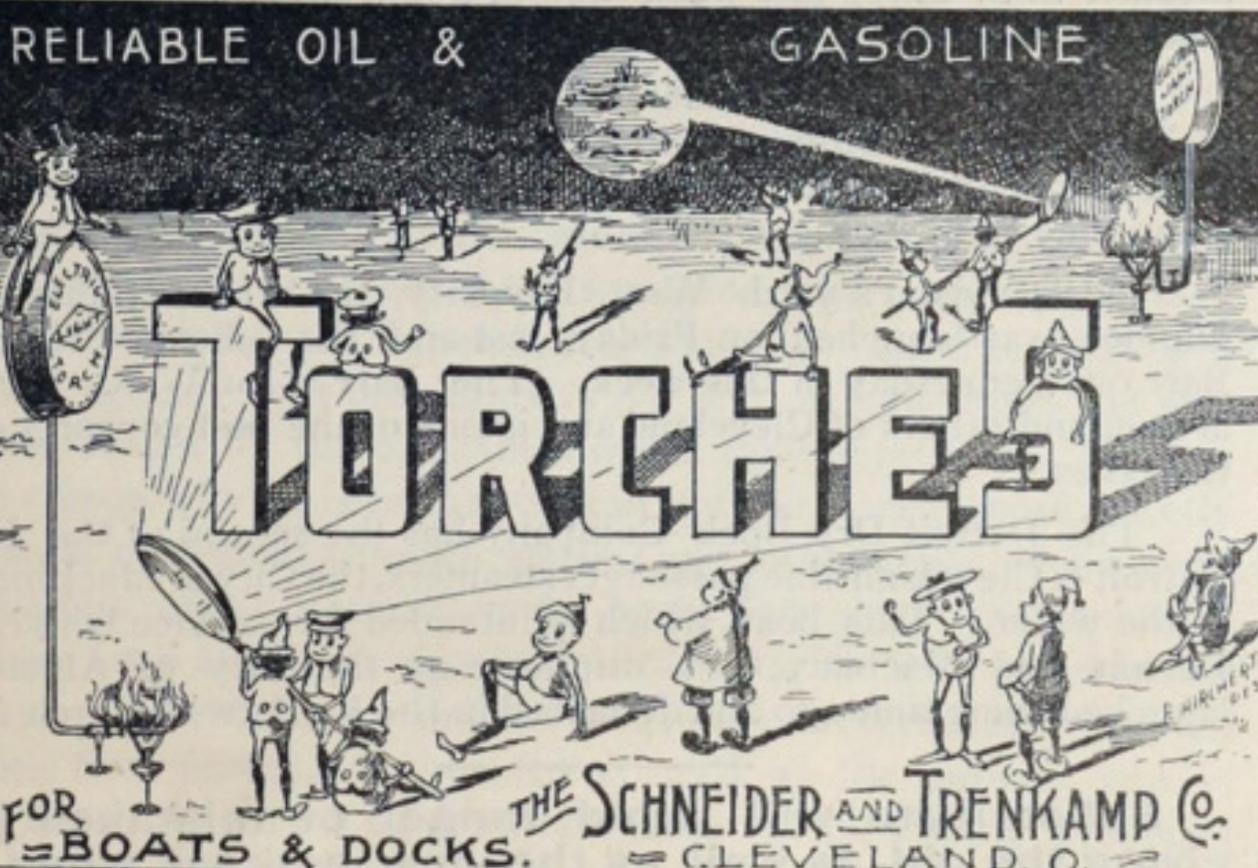
1893.

CHAS. H. POTTER & CO.,  
Investment Bankers,  
Cleveland, O.

Dealers In

Lake Superior Iron Mining Stocks,

on about 10 per cent. annual dividend basis, Republic Iron Co., Lake Superior Iron Co., Champion Iron Co., Minnesota Iron Co., Jackson Iron Co., Cleveland-Cliffs Iron Co., Chandler Iron Co., Chicago and Minnesota Ore Co.



48 inch stroke. The boat has a deadweight capacity of about 7,200 tons, while her measurement capacity for cargo is equal to no less than 9,500 tons of 40 cubic feet to the ton.

Inventors of submarine boats will now have a chance to submit their designs to the navy. The last congress made an appropriation for a submarine torpedo boat, and a circular calling for bids has been issued. The general requirements to be fulfilled in the design and trial of the boat stated in the order of importance are as follows: 1, safety; 2, facility and certainty of action when submerged; 3, speed when running on the surface; 4, speed when submerged; 5, endurance, both submerged and on the surface; 6, offensive power; 7, stability; 8, visibility of object to be attacked. Speed on the surface should be as great as possible and is more important than speed when submerged. The boat should be planned to run on the surface, except when necessary to avoid detention or pursuit. Means should be provided, which could readily be applied, for reducing the boat's displacement when running on the surface to the necessary weights to be carried. Speed when submerged must be sufficient to enable her to attack a ship under way and running at considerable speed. The displacement should not exceed 150 tons and may be as much less as will enable the constructor to embody the above features in the highest degree.

## Trade Notes.

H. B. Stranahan & Co., No. 32 Power block, Cleveland, have published an excellent map of the city and suburbs, the wards being shown in seven colors. The street directory is valuable, and in connection with the indicating letters and figures on the map any street in the city can be readily located. The map shows 17 miles of lake front.

The Carbon Steel Company of Pittsburg will make the steel plates for the revenue cutter Windom, building at Dubuque, Ia. The Carbon company has let contracts for two new 30-ton open-hearth furnaces, two electric traveling cranes and other additions to its plant. When these are completed the company will be able to turn out 350 tons of steel a day.

Reels operated by steam are beginning to be utilized by lake fishermen in lifting nets. They are made by the Sheriffs Manufacturing Company of Milwaukee, and are said to shorten the time of making a lift upwards of an hour.

The Ameracan, Shipmasters' Association of New York classed the following vessels during the past week: American three masted schooners Charles E. Young and Thelma; American barkentine Geneva; British bark Salacia and British three-masted schooner Zouave.

TREASURY DEPARTMENT, UNITED STATES Life-Saving Service, Washington, D. C., April 25, 1893. Sealed proposals will be received at this office until 2 o'clock p.m., of Wednesday, May 17, 1893, for the construction of a Life-Saving Station at Ashtabula, Ohio. Forms of proposal, together with plans and specifications can be obtained upon application to this office, to the Superintendents of Construction, Life-Saving Stations—No. 24 State Street, New York City, to the Superintendent 9th Life-Saving District, Buffalo, New York, or to the Assistant Inspector, Life-Saving Stations, 9th and 10th Districts, Detroit, Michigan. S. I. KIMBALL, General Superintendent. 27-4

OFFICE OF LIGHT-HOUSE ENGINEER, Fifth District, Baltimore, Md., April 7, 1893. Sealed proposals will be received at this office until 2 o'clock p.m. of Wednesday, the 17th day of May, 1893, for furnishing the materials and labor of all kinds necessary for the completion, delivery, and erection at the sites of the metal work of Cape Charles and Hog Island Light Towers, Virginia, for a fixed sum for each light tower or for an aggregate sum for both towers. The bids most advantageous to the United States Government will be accepted. Plans, specifications, forms of proposal, and other information may be obtained on application to this office. The right is reserved to reject any and all bids and to waive any defects. ERIC BERGLAND, Captain of Engineers, U. S. A., Light-House Engineer Fifth District. 13 to 12

UNITED STATES TREASURY DEPARTMENT, Steamboat Inspection Service, "The Maltby," Washington, D. C. A Special Meeting of the Board of Supervising Inspectors will be held at Washington, D. C., on May 10th, 1893, to determine and prescribe the lights for "Barges and Canal Boats when in tow of steam-vessels," in accordance with the Act of Congress approved March 3d, 1893.

All persons interested are invited to present their views in writing to the Supervising Inspector-General, Steamboat Inspection Service. "The Maltby," Washington, D. C., also to appear before the Board in person when it meets if they desire to do so.

No other business will be transacted by the Board except that specially referred to in this advertisement. JAS. A. DUMONT, Supervising Inspector-General. 6-13-20-27-4

**MARINE VALVE OIL**

For Cylinder Lubrication is unsurpassed, and is used in 90 per cent. of the large steamers on the great chain of lakes.



Marine Valve,  
Renown Engine,

Eldorado Engine, Victor Signal, Mineral Seal,  
Crank Case, Dark Lubricating, Head Light,  
Artic Cup Greases, and Lard Oils.

CARRIED IN STOCK AT THE—

**Standard Oil Company's Marine Depot,**

123 River Street, CLEVELAND, O.

TELEPHONE 77. MAIN OFFICE TELEPHONE 682.

ALSO FOR SALE BY

**STANDARD OIL COMPANY.**

No. 5 Wabash Ave., Chicago, Ill.  
Racine, Wis.  
Broadway & Mason, Milwaukee, Wis.  
Sheboygan, Wis.  
Manitowoc, Wis.  
Green Bay, Wis.  
Marinette, Wis.  
Oshkosh, Wis.  
Duluth, Minn.

West Superior, Wis.  
Hancock, Mich.  
Marquette, Mich.  
Sault Ste. Marie, Mich.  
Michigan Central Railway & 10th St.,  
West Bay City, Mich.  
Eighth & Sears Sts., Saginaw, Mich.  
46 Jefferson, Detroit, Mich.  
Summit & Monroe Sts., Toledo, O.

STANDARD OIL COMPANY, Star Oil Works, Buffalo, N.Y.  
BABY & DALE, St. Clair, Mich.  
N. C. ALLEN, Lorain, O.  
A. F. HARRINGTON, Conneaut Harbor, O.

A. H. McGONAGIL, South Chicago, Ill.  
MARINE SUPPLY CO., Fairport, O.  
F. KRAZ, Sandusky, O.

THE M. I. WILCOX CORDAGE & SUPPLY CO., Toledo, O.

ATLANTIC REFINING COMPANY, French & 16th Sts., Erie, Pa.  
D. ROBESON, Port Huron, Mich.  
W. S. M. KINNON, Ashtabula Harbor, O.  
HULL & RAND, HURON, O.



F. W. WHEELER,  
President.

E. T. CARRINGTON,  
Vice-President.

F. L. GILBERT,  
Secretary.

## F. W. WHEELER & CO.,

WEST BAY CITY, MICH.

Builders of all kinds of METAL AND WOODEN SHIPS.

"Nothing Succeeds Like Success."

## The United States Metallic Packings FOR Piston Rods and Valve Stems.

After Years of Service it Still Excels ALL Others. In use ON MOST ALL THE LARGE STEAMERS ON THE LAKES.

WRITE US FOR CATALOGUE.

**GEO. P. WILSON, Gen'l Agt.,** 435 North Broad St., Philadelphia, Pa.  
614 Rialto Building, Chicago, Ill.

H. A. BARR, PRESIDENT, F. H. VAN CLEVE, SEC. CAPT. GEO. BARTLEY, SUPT  
Escanaba. Escanaba. Escanaba.

**ESCANABA TOWING & WRECKING CO., Escanaba, Mich.**

Tugs, Lighters, Steam Pumps, Hawser, Hydraulic Jacks and Diving Appliances always ready.

TUG MONARCH, Engine Compound, Cylinder 16 and 30 inches diameter, 30 inch

Stroke, Steam Pressure Allowed, 125 pounds.

TUG DELTA, Cylinder 20 by 22, Steam Pressure Allowed, 105 pounds.

TUG OWEN, Cylinder 20 by 20, Steam Pressure Allowed, 104 pounds.

**CENTRIFUCAL PUMPS**, Seven and Fourteen Inch Suction.

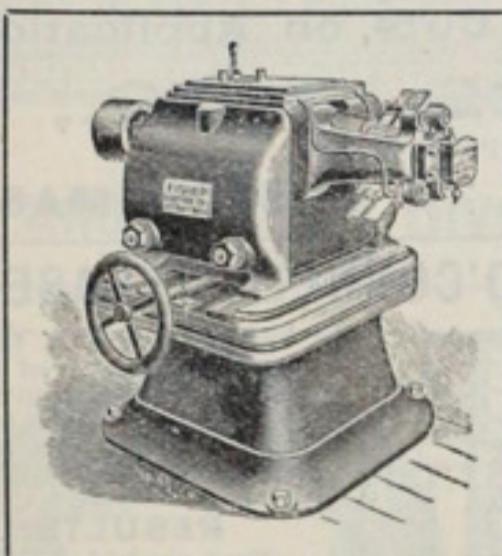
## Lumber Tow for Sale.

Steamer Belle P. Cross, A2,  
Barge Chicago Board of Trade, A2,

Barge S. Clement, B1,  
Barge Geo. H. Waud, B1.

Aggregate capacity 2,000,000 feet. Will be sold at reasonable prices.

Call or address, **H. A. HAWGOOD**, 815 Perry-Payne Building, CLEVELAND, O.



## Second-Hand Lighting Plants for Sale.

One 300-Light Brush Dynamo,  
One 150-Light Brush Dynamo,  
One 125-Light Brush Dynamo,

REMOVED FROM STEAMERS CITY OF  
CLEVELAND AND CITY OF DETROIT.

One 125-Light United States Dynamo, Removed from Steamer Castalia.

One 300-Light United States Dynamo, Removed from Steamer Tuscarora.

One 125-Light Thomas-Houston Dynamo, Removed from Yacht Wadene.

Fisher Electric Company,

Detroit, Mich.

WILLIAM L. BROWN,  
PRESIDENT.

W. F. COBB,  
VICE-PRESIDENT.

W. I. BABCOCK,  
MANAGER.

O. R. SINCLAIR,  
SECRETARY.

# CHICAGO SHIP BUILDING COMPANY,

## STEEL STEAM-SHIP BUILDERS,

TELEPHONE No. 40.  
(South Chicago Exchange.)

### MARINE REVIEW LINER EXCHANGE.

Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind or wishing to purchase vessels, are invited to take advantage of the same offer. Employers in need of professional men or men who want positions may avail themselves of the opportunities offered. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 516 Perry-Payne Building, Cleveland, O.

201—FOR SALE, CHEAP—Eight steam cranes, twenty-four iron ore buckets, twenty-four trucks and eight overhead dump cars, all of which have had very little use and are in good condition; can be seen in Cleveland.

202—FOR SALE CHEAP—10x12 marine engine, boiler and propeller wheel.

203—FOR SALE—Upright marine boiler, 52x84 inches, 160 pounds of steam, rocking grates and fittings complete.

204—FOR SALE—1 good second hand marine boiler 7x13 tested for 90 pounds steam, will be sold cheap if taken by June 1st.

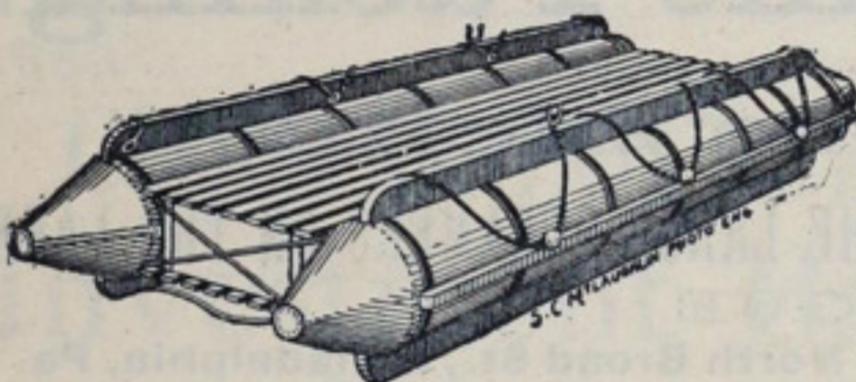


**STEP FORWARD**  
AND OWN AN  
INDICATOR  
and know how to  
to use it.  
Send for circular.

He is using the best  
till he has tried  
**EUREKA**  
PACKING  
For Steam, Water  
and Air.  
Send for Sample.

HINE & ROBERTSON, 40 Cortlandt  
St., N.Y.

**NO MAN  
CAN  
SAFELY  
SAY**



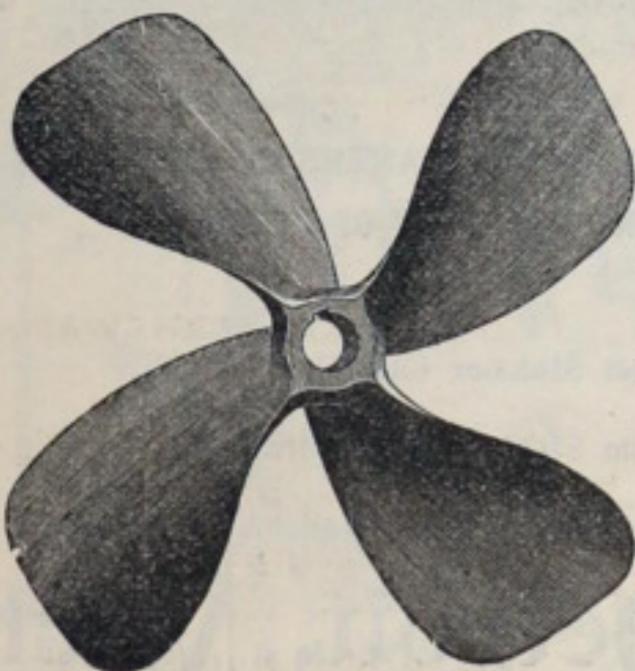
Thos. Drein & Son,  
BUILDERS OF

Metallic Life Boats and Rafts,  
Government and Pleasure  
Boats. Block and Granulated  
Cork Life Preservers. Outfit  
for Lake Steamers a Specialty.  
TATNALL & RAILROAD STS.  
Wilmington, Del.

**THE "CINCINNATI"**  
AUTOMATIC  
**STEAM STEERING GEAR**  
A Simple, Powerful Machine. Noiseless and Sure.  
SEND FOR CIRCULAR

CRAWLEY & JOHNSTON,  
119-121-125 E. Pearl St., CINCINNATI, OHIO.

**H. G. TROUT**  
**KING IRON WORKS,**



BUFFALO, N.Y.,  
MANUFACTURERS OF  
**TRIPLE EXPANSION,**  
**THREE CYLINDER,**  
**FORE AND AFT**  
And **STEEPLE COMPOUND**  
**MARINE ENGINES,**  
High and Low Pressure Engines,  
Sectional, Propeller,  
Tug and Yacht Wheels.  
Cowles Aluminum and Manganese  
Bronze Propeller Wheels.

These Wheels are noted for their extra  
speed, towing power and proportionate  
saving of coal.

PRICES QUOTED ON APPLICATION.

101st St. and Calumet River, COLEHOUR, ILL.

### THE JENKS SHIP BUILDING CO.

Will have FOR SALE OR CHARTER by the begining  
of navigation, 1893,

### THREE (3) STEAMERS

Especially Designed for the Lumber Trade.

If interested, address them at PORT HURON, MICH.

### C. H. McCUTCHEON,

(Successor to SAMUEL McCUTCHEON.)

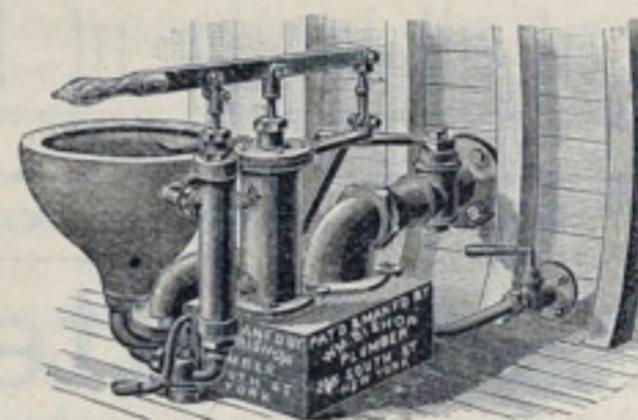
### Copper, Tin and Sheet Iron Manufactory, Steamboat and Engineers' Supplies.

All kinds of Brass Cocks, Globe Valves and Couplings, &c. Iron Pipe and Fittings, and  
Mill Supplies. Rubber Belting, Hose and Packings, Springs, Valves, &c.,  
Leather Belting and Usudurian Packing.

Telephone No. 68.

No. 18 Ohio Street BUFFALO, N.Y.

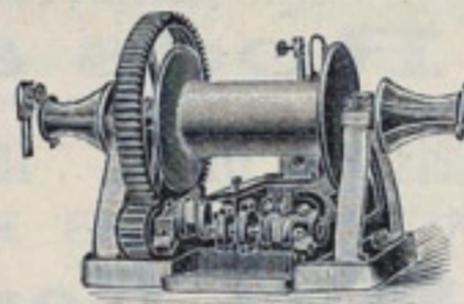
### COMBINATION PUMP WATER CLOSET



For Yachts, Pilot Boats,  
Naval Ships, Etc.

For above or below water line. No  
tank needed, and when below water  
line you can flush bowl without hav-  
ing to use pump.

WILLIAM BISHOP,  
Plumber, Coppersmith & Steam Filter,  
Telephone 4811 Cortlandt,  
205 South Street, NEW YORK.  
Yacht Fittings a Specialty.

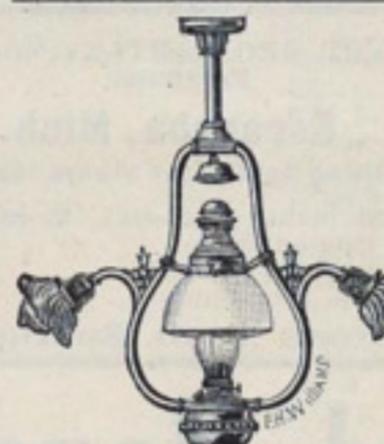


JNO. L. JACKSON,

Builder of DUPLEX HOISTING AND DECK ENGINES.

Plain Finished and Automatic ENGINES, From Heavy Patterns  
at Moderate Prices.  
Vertical, Horizontal, Marine & Locomotive BOILERS Strictly First-Class  
and Highest Test.

Send for Circulars and Prices. SAGINAW, MICH.



### SHIP LAMPS.

OIL AND ELECTRIC FIXTURES

FOR  
**Steamships, Yachts, &c.**

GREAT VARIETY OF DESIGNS.  
Prices and Cuts on Application.

PAGE BROS. & CO.,

(FORMERLY WILLIAMS, PAGE & CO.)

227 to 233 Cambridge St.,

BOSTON, MASS.

### Haycox Sight Connection

—FOR—

### Oil Pumps.

Pat. Jan. 12, '92.

Is placed between  
pump and cylinder  
and shows whether  
oil is flowing.

Write for  
Prices and  
Circular.

EDWARD HAYCOX,

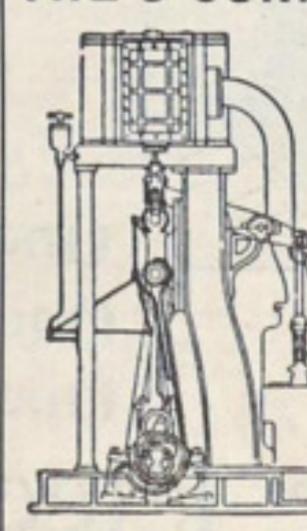
145 Wilkins St.,  
DETROIT, MICH.

### THE O'CONNELL GREASER,

During the past three  
years hundreds of ma-  
rine engines of from 2,000  
to 4,000 h. p. have been  
served, as well as high  
speed electric light en-  
gines.

#### RESULTS:

Sure control of Crank  
Pin.  
Stoppage of Lard Oil  
account.  
Perfectly clean Engine



Wadham's Oil & Grease Co.  
Sole Manufacturers,  
MILWAUKEE, WIS.

Write for Catalogue and Prices of Cup and  
Greaser Grease.

**Engine, Boiler and Wheel for Sale.**

**10 by 12 Non-Condensing Marine Engine, 8 by 4 feet Steel Boiler and Propeller Wheel, complete, for sale cheap.**

W. B. ALEXANDER, 522 Perry-Payne Building, Cleveland, O.

**FOR SALE.**

**ONE GOOD SECOND-HAND MARINE BOILER,**  
7 x 13, Tested for 90 lbs.

**Will be sold cheap if taken by June 1st.**  
Inquire at MARINE REVIEW.

"The most perfect feed water heater and purifier we ever saw."—R. HAMMOND.

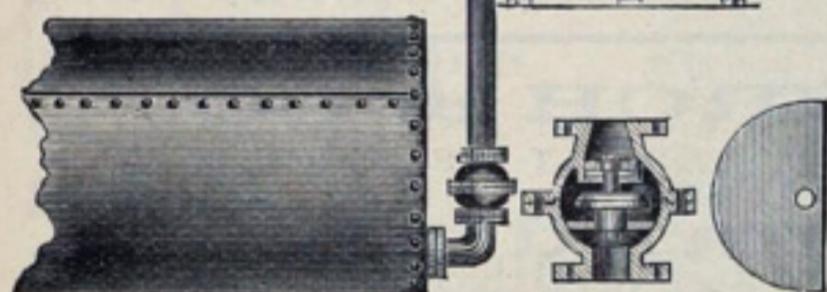
**IN PRACTICAL USE ON 25 LAKE STEAMERS.**

**Every Purifier Warranted to Remove all Sediment or Scale-Forming Substance.**

**ROBERT LEARMONT** PATENEE,

200 BOUCK AVENUE, - - - - - BUFFALO, N. Y.

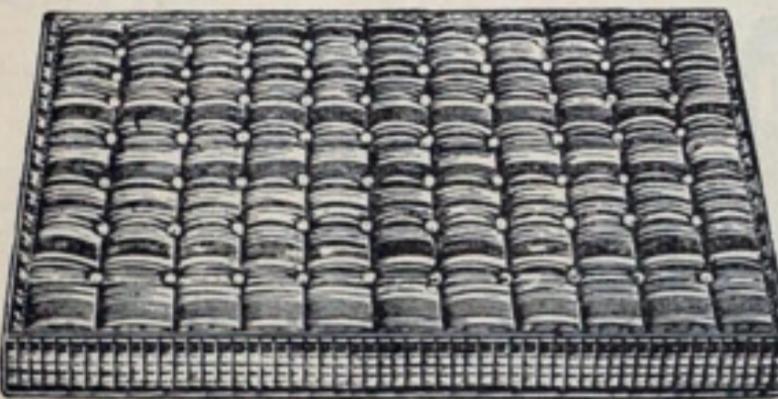
**THE BUFFALO FEED WATER HEATER AND PURIFIER.**

**REFERENCES.**

- A.—Settling chamber.
- B.—Boiler.
- C.—Feed pipe to boil
- D.—Steam pipe.
- E.—Water supply pipe.
- F.—Check valve.
- G.—Spray disks.
- H.—Spray chamber.
- I.—Equalizing tube.
- J.—Blow-off pipe.
- K.—Automatic shut-off valve.
- L.—Division plate.
- M.—Deflector and separator.

**HAYES, HEIM & STACK,**

MANUFACTURERS OF

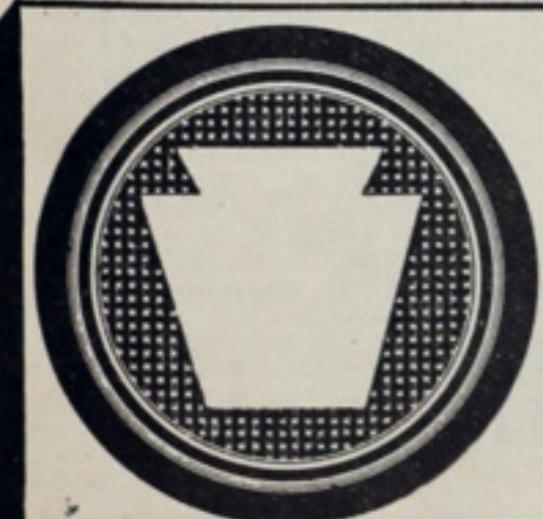


**Mattresses,  
Pillows, &c.**

Steam Boat and  
Vessel Furnishing  
a Specialty.

TELEPHONE 539.

68 and 70 East River St., Cleveland, Ohio.



**ERIE RUBBER CO.**

ERIE, PA.

Manufacturers of the

**KEYSTONE MARINE VALVE**

THESE

**RED RUBBER VALVES**

ARE THE

**BEST AIR & FOOT VALVES MADE.**  
IF YOUR DEALER DOES NOT KEEP THEM,  
WRITE DIRECT TO THE FACTORY.

**For Sale Cheap---Eight Steam Cranes.**

**Twenty-four Iron Ore Buckets.**

**Twenty-four Trucks and Eight Overhead Dump Cars,**  
All of which have had very little use and are in good condition. Can be seen in Cleveland.

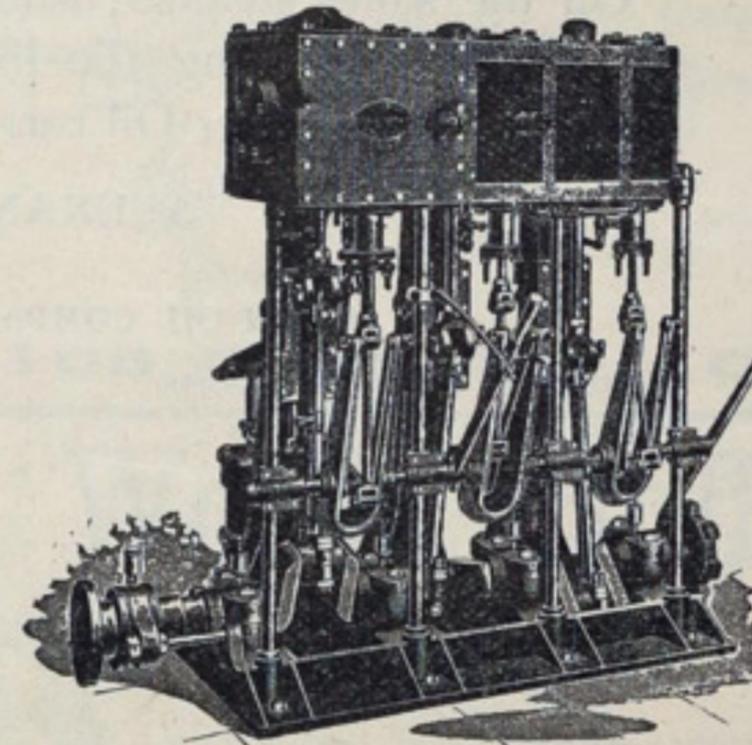
Andrews, Hitchcock & Co., 420 Perry-Payne Blg., Cleveland, O.  
4-11-18-25

**WHY?**

**MAGNESIA COVERINGS**

For BOILERS and STEAM PIPES are Without a Rival, and that is WHY you should use them.

**S. P. CONKLING,** 18 East Atwater Street, DETROIT, MICH.

**The Collier Steam Yacht & Engine Works,  
DETROIT MICH.**

Builders of High Speed, Compound and Triple Expansion Engines of all sizes, from 30 to 600 horse power, original in design, with patent valve gear, which makes them the most perfectly balanced engines in the world.

**CHEAP, DURABLE, SPEEDY.**

**THE COLLIER WATER TUBE BOILER.**

Write for Particulars and Prices.

**No. 4 BECK**  
**Steam Steering Gear.**

**Extracts from Letters.**

"THE steering gears of the lakes." Capt. Higbie, V. O. T. Co., Chicago.

"Cannot be excelled." Capt. Cochran, Steamer Marion.

"Gives entire satisfaction." Independent Tug Line, Chicago.

"Are giving excellent satisfaction." Milwaukee Dredge Co.

"The No. 4 Beck Steering Gear put in our steamer, Samuel Mather, has given excellent satisfaction." W. L. Mahon, Mech'l Eng'r. American Steel Barge Co.

**PAWLING & HARNISCHFEGER,**  
156-168 Clinton Street,  
**MILWAUKEE, WIS.**

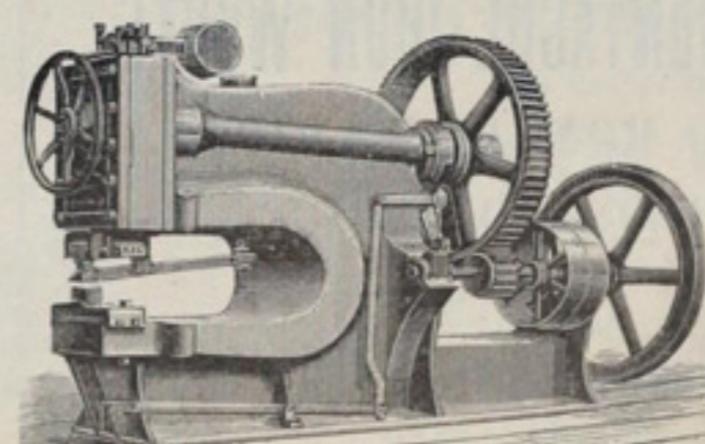
**The Excelsior Machine and Cleveland Punch and Shear Works Co.**

SUCCESSORS TO

**LEIGHTON & HATHAWAY.**

Manufacturers of

Punches, Shears, Bending Rolls, Rotary Planers, Overhead & Post Drill Presses.



980 to 986 Hamilton St.,  
CLEVELAND, OHIO.

## With or without Water.

On the "C. W. Elphicke."

August 30, 1892.

I gave Vacuum Marine Engine Oil a thorough trial on slides and crank-pins. It will run with or without water and give good results.

On the same steamer, which is fitted with triple-expansion engines, carrying 160 lbs. steam, I made a barrel of your 600 W Cylinder Oil carry me 13,000 miles.

ALEXANDER BAIN, Chief Engineer.

VACUUM OIL COMPANY, Rochester, N. Y.

In stock at the leading ports.

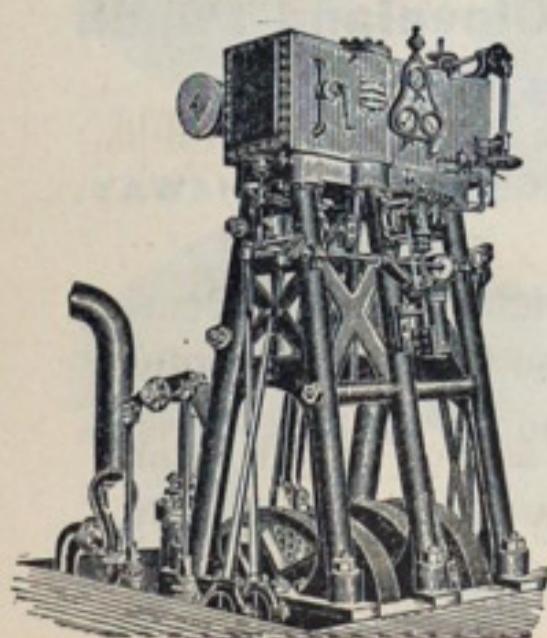
### DETROIT SHEET METAL AND BRASS WORKS,

64 Orleans Street,  
DETROIT, MICH.

Sole Manufac-  
turers of

\*  
IN USE ON  
MOST OF THE  
LAKE PASSENGER  
AND FREIGHT STEAMERS.

**JENKINS BROS.' VALVES**  
Every valve tested and warranted, all parts interchangeable.  
Nothing but best Steam Metal used in the manufacture.  
Keyed Stuffing Box and Disc Removing Lock Nut  
Is used only in the Jenkins Bros.' Valves.  
None are genuine unless stamped with "Trade Mark."  
Should you order, INSIST on having Jenkins Bros.' Valves.  
71 JOHN STREET, NEW YORK. 31 & 33 N. CANAL ST., CHICAGO.  
21 NORTH FIFTH ST., PHILA. 105 MILK STREET, BOSTON.



J. D. WILSON.

M. HENDRIE.

### MONTAGUE IRON WORKS,

MONTAGUE, MICH.

WILSON & HENDRIE, Proprietors.

MANUFACTURERS OF

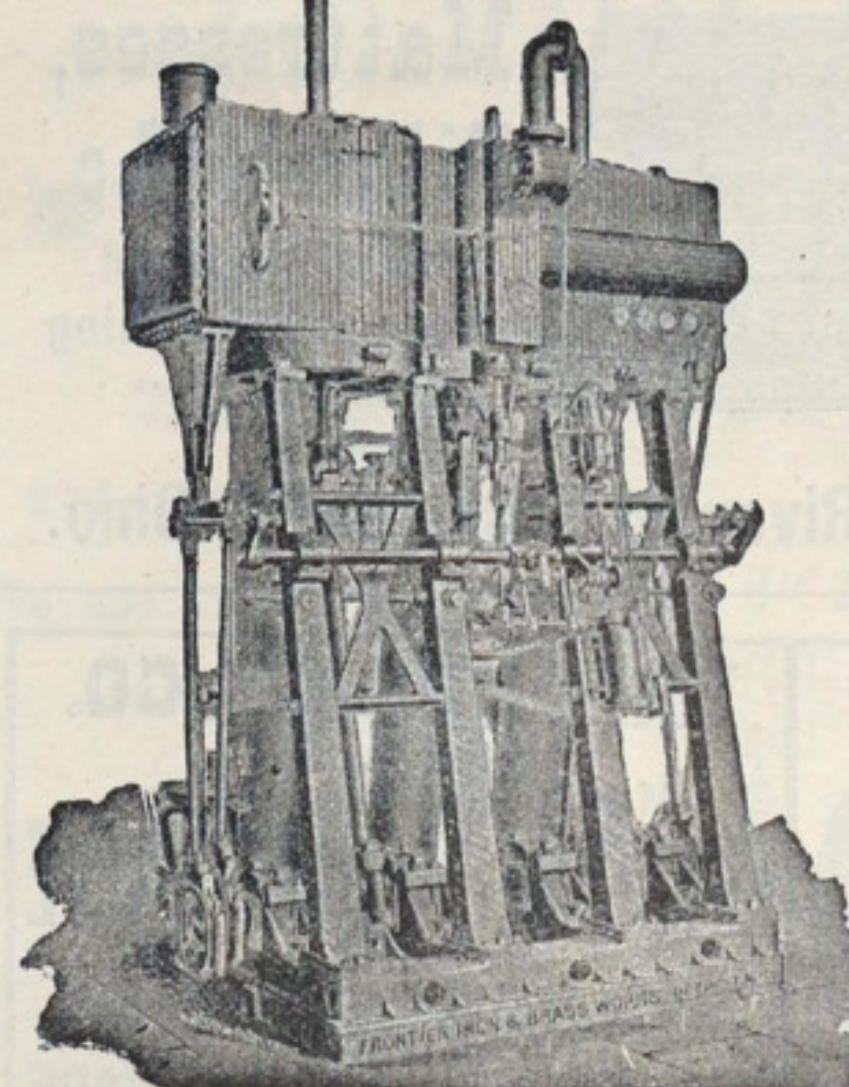
MARINE :: ENGINES :: AND :: BOILERS,

and General Mill Machinery.

**P. M. CHURCH & CO.,**  
SAVINGS BANK BLOCK, SAULT STE. MARIE, MICH.  
LEADING DEALERS IN  
**Ship Chandlery,**  
Marine Hardware, Paints, Oils, Packings, Cordage, Etc.  
FIRST-CLASS COPPERSMITH AND TINSHOP IN CONNECTION.

### THE FRONTIER IRON WORKS.

Fitted with "JOY PATENT VALVE GEAR."



DETROIT, MICH., Builders of

**TRIPLE EXPANSION**

and all kinds of

**Marine Engines**

Engines furnished for  
Steamships:

T. W. Palmer, Living-  
stone, Majestic, Tampa,  
John Mitchell, Nyanza,  
Fedora, Geo. F. Williams,  
Mackinaw, Keweenaw,  
Jno. Harper, W. F.  
Sauber and Iosco.  
Panther, (for a and com-  
pound).  
Uganda, W. H. Gilbert,  
C. F. Bielman.

WHALEBACKS—

Samuel Mather,  
Pathfinder.

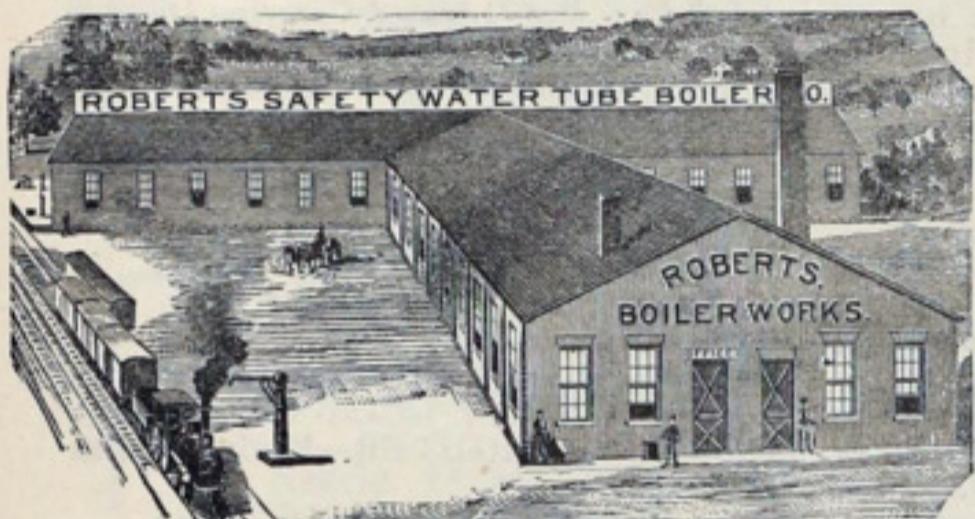
**AMERICAN CHAIN CABLE WORKS.**

ESTABLISHED 1865.

Cable, Dredge, Quarry, Shipping, Crane and Rafting  
**CHAINS.**

Our DREDGE and CRANE CHAINS are made of IRON ROLLED  
 SPECIALLY for that purpose. Send for Price List.

J. B. CARR & CO., Manufacturers, TROY, NEW YORK.

**The Roberts Safety Water Tube Marine Boiler**

**THE ROBERTS SAFETY WATER TUBE BOILER CO.**  
 Works Covering 12,000 Square Feet of Ground at RED BANK, N.J.  
 18 Cortlandt Street, NEW YORK CITY.

FOR  
 Yachts, Launches,  
 AND OTHER  
 Steamers.

OVER 500  
 IN USE.

Safe, Reliable, Simple,  
 Light Weight, No Shop  
 Repairs, Small Space.  
 Send for Illustrated  
 pamphlet and other  
 reading matter.

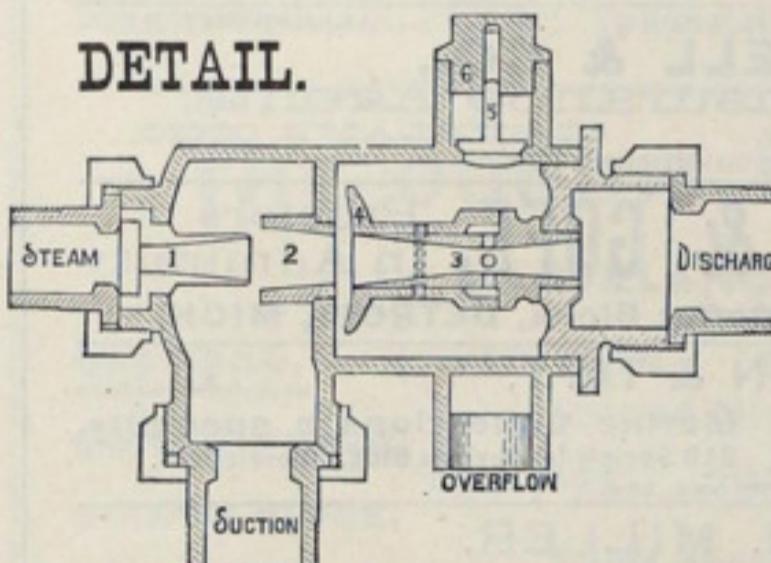
**YACHTING!**

GO TO THE WORLD'S FAIR  
 WITH YOUR YACHT'S CREW UNIFORMED  
 BY

**FRANK G. OVERBEKE,**  
 TAILOR AND OUTFITTER,

FINELY ILLUSTRATED  
 CATALOGUE  
 ON APPLICATION.

112 Woodland Ave., CLEVELAND, O.

**The Globe Automatic Injector.****DETAIL.**

See the SIMPLICITY OF IT!

SUPERIOR FOR  
 MARINE BOILERS.

Write for Particulars.

**Eagle Lubricator Co.**

MANUFACTURERS,

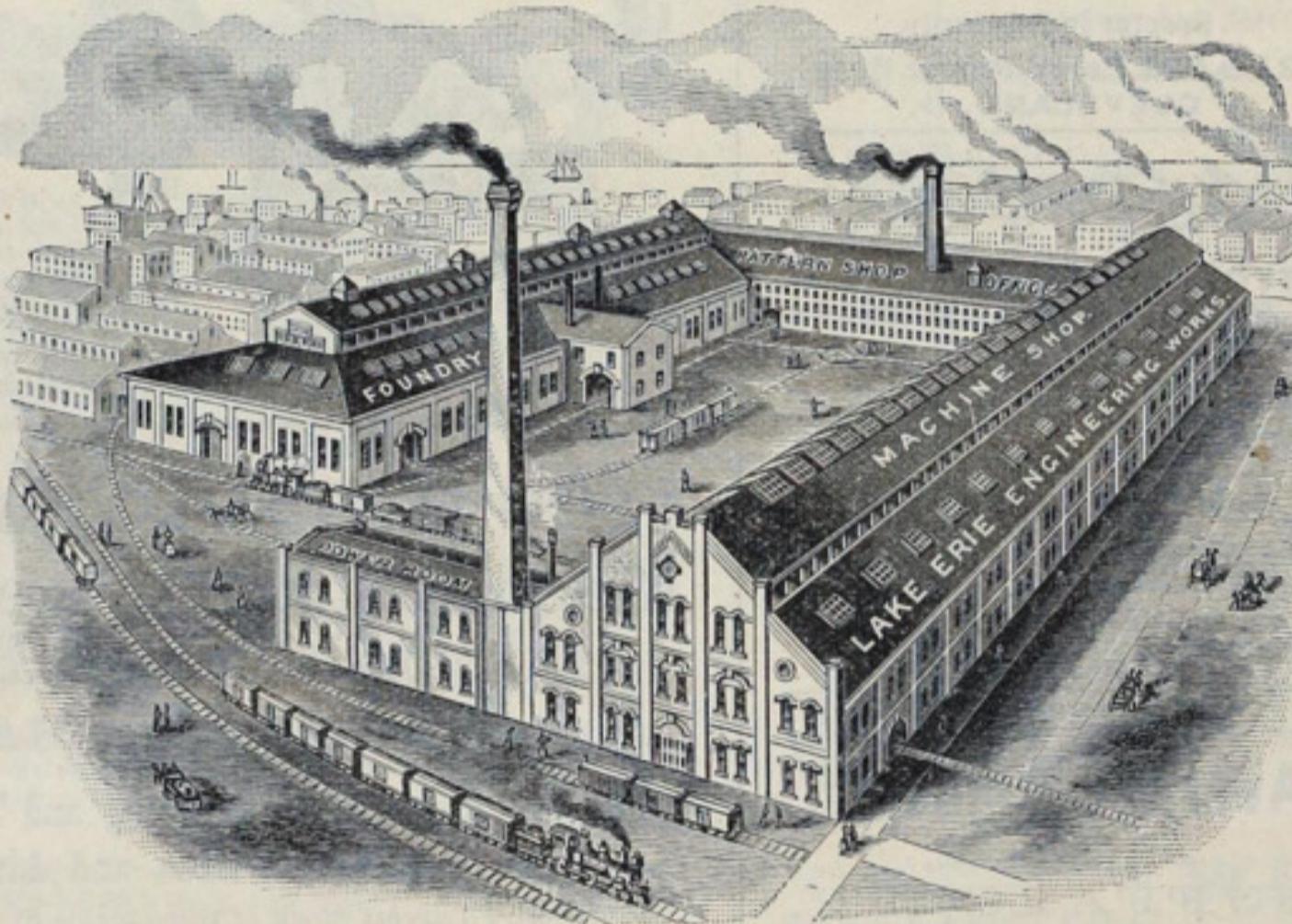
108 Canal St., - Cleveland, O.

**Lake Erie Engineering Works, Buffalo, N.Y.**

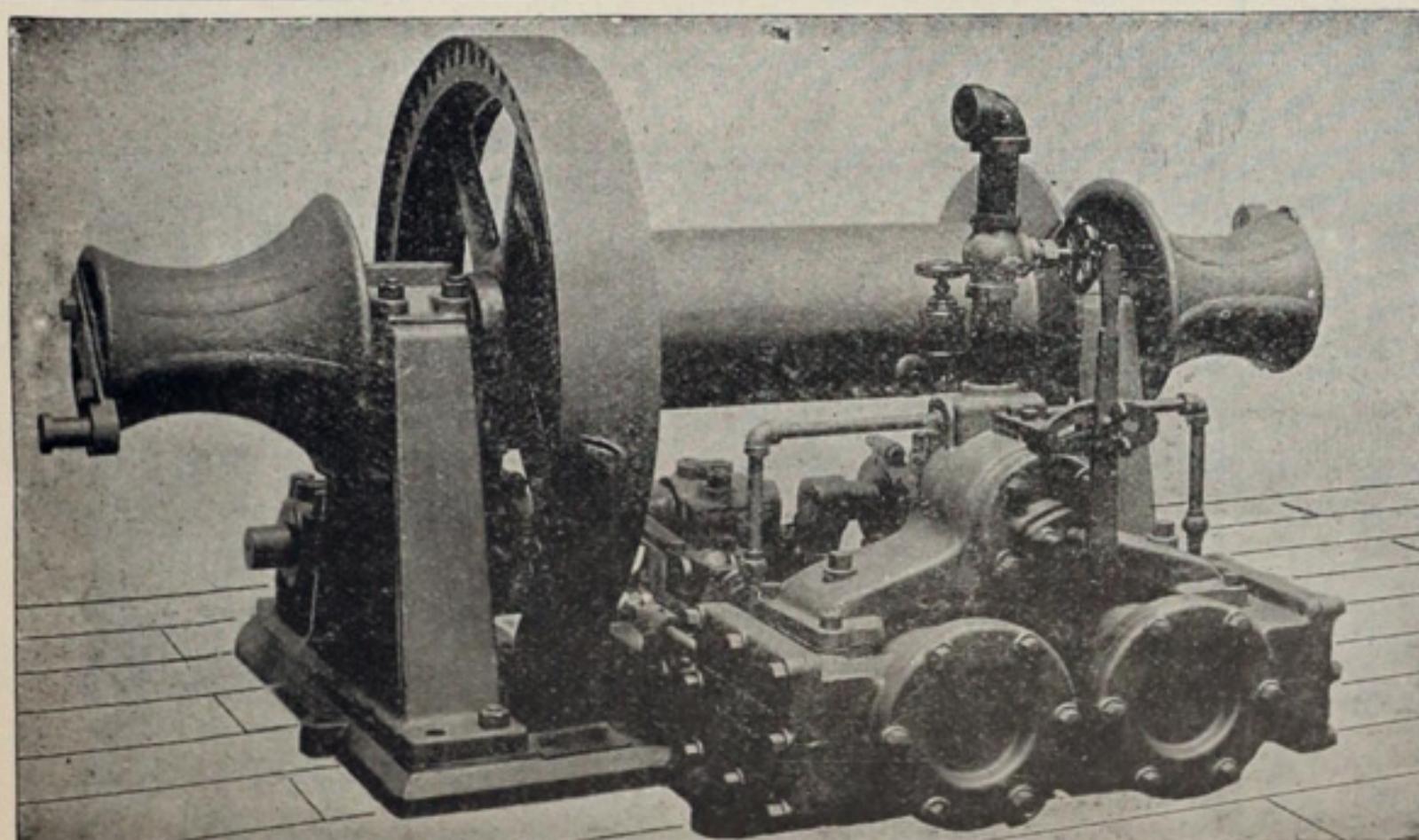
RICHARD HAMMOND, Pres't.

JOHN COON, Sec'y and Treas.

Steam Engines,  
 Compound, Triple  
 and Quadruple  
 Expansion  
 Engines,  
 From 250 to 10,000  
 Horse Power  
 For Marine and  
 Stationary  
 Service.



**THE BEST EQUIPPED PLANT IN AMERICA.**

**The Chase Machine Co.**

111 Elm St., CLEVELAND, O.

**Machinists and Engineers,**

Manufacturers of  
 Land and Marine Engines and Steam Pumps,

Sole Owners and Manufacturers of the

**Chase Fog Whistle Machine.**

Over 150 in use on the best class of Lake Steamers.

Special Attention given to Marine Repair Work.

ENGINEERS' SUPPLIES.

ASBESTOS PIPE AND BOILER COVERING.

Telephone 894

SHERMAN, HOYT & DUSTIN,  
LAWYERS AND PROCTORS IN ADMIRALTY.  
Western Reserve Building, Room 701 to 706, CLEVELAND, O.

HARVEY D. GOULDER,  
LAWYER AND PROCTOR IN ADMIRALTY.  
CLEVELAND, O.

ROGER M. LEE. LEE & TILDEN, DUANE H. TILDEN.  
**Proctors in Admiralty.**  
Telephone 1191. 504 Perry-Payne Bldg., CLEVELAND, O.

**H. R. SPENCER,**  
ATTORNEY AT LAW and PROCTOR IN ADMIRALTY.  
218 Superior St., DULUTH, MINN.

**C. E. KREMER,** Attorney and Counselor-at-Law and  
Proctor in Admiralty.  
Rooms 14, 15 and 16, Bryan Block, 164 LA SALLE ST., CHICAGO, ILL.  
JOHN MITCHELL. JOHN F. WEDOW. ALFRED MITCHELL.

**MITCHELL & CO.,** Vessel and Insurance Agents,  
508, 509 and 510 Perry-Payne Building, CLEVELAND, OHIO.  
Office Telephone, 787. Residence, John Mitchell, 3506.

W.M. A. MOORE. **MOORES & GOFF,** Proctors in Admiralty  
W.M. V. MOORE. 60-61 Moffat Block, DETROIT, MICH.  
JOHN H. GOFF. Telephone 2565.

H. C. MASON. **MASON & TAFT,** F. L. TAFT.  
ATTORNEYS-AT-LAW, Marine Collections a specialty.  
218 Society for Savings Bldg., Cleveland, O.  
TELEPHONE 876.

WM. H. MILLER, ATTORNEY AND PROCTOR IN ADMIRALTY. Marine Collections.  
ATTORNEY AND PROCTOR IN ADMIRALTY. Marine Collections.  
626 Society for Savings Bldg., Cleveland, Ohio.

**"ALL HANDS AFT."** Let me get your Patent, Trade Mark, or Claim for you. Honest and Good work is my pride.

EDWARD C. WEAVER, Atty., 900 F. (opp. Patent Office), WASHINGTON, D.C.

C. A. Macdonald. J. J. Hardon.

**C. H. MACDONALD & CO.** General Insurance Agents,

RIALTO BUILDING, CHICAGO, ILL.  
H. S. LORD. J. H. NORTON.

**LORD & NORTON,** Attorneys-at-Law, Proctors and Advocates in Admiralty, DULUTH, MINN.

White, Johnson & McCaslin, ATTORNEYS-AT-LAW, AND Proctors in Admiralty, 26-27 Blackstone Building, CLEVELAND, - OHIO.

**THOS. WILSON,** MANAGING OWNER WILSON'S TRANSIT LINE, Gen. Forwarder. Freight and Vessel Agent. CLEVELAND, O.

C. F. Palmer. Chas. Hutchinson. P. J. Minch.

**PALMER & CO.,** Vessel Owners and Agents, (John H. Palmer and John T. Hutchinson, Associates.) Perry-Payne Bldg., Cleveland, O.

W.A. HAWGOOD. C. C. CANFIELD. **HAWGOOD & CANFIELD,** Vessel Agents and Marine Insurance, 604-605 Perry-Payne Bldg., Cleveland, - Ohio. Telephone No. 2395.

Capt. LYMAN HUNT. JAMES P. HUNT. **L. HUNT & SON,** Vessel Brokerage & Marine Insurance, Room 9, Exchange Building. Telephone No. 522. No. 202 Main St., BUFFALO, N.Y.

## To Owners and Masters of Steam Barges.

We beg to call your attention to the fact that we have steam lighters at the ports of Cleveland, Ashtabula and Buffalo, specially equipped for fueling vessels, which enable us to run alongside steamers and fuel them while they are unloading during day or night time. We also have fueling docks at the above ports, at which we can take care of vessels not desiring to avail themselves of the services of the steam lighters. We shall in the future, as in the past, handle nothing but the best grade of Pittsburg coal, and respectfully solicit your patronage.

**PICKANDS, MATHER & CO.**

## THE CUDDY-MULLEN COAL CO., Dealers in COAL.

Docks at Government Pier, Whiskey Island, and Adjoining Globe Dry Dock. All fully equipped with Revolving Derricks; also, Lighter Carrying Derrick and One Hundred Two and One-Half Ton Buckets.

Main Office, 81 Perkins Building, East Side of Main Street Bridge. Dock Office, 127 West River St., Cleveland, O. Telephone No. 8.

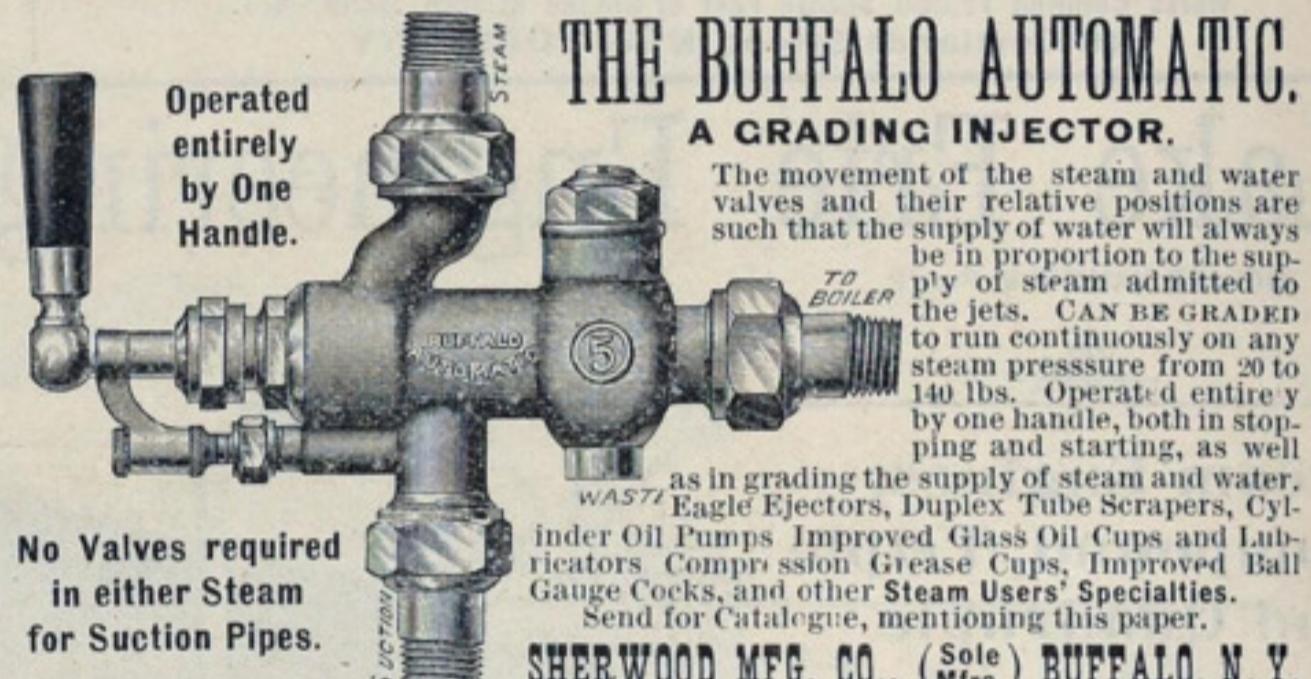
Boats Coaled Day and Night. Docks at Amherstburg,

## Ohio & Pennsylvania Coal Co.

FUEL DEPARTMENT.  
**MINERS AND SHIPPERS,**

Youghiogheny and Ohio Steam Coals. Steamboats, Tugs, etc., Coaled day or night, DOCKS FOOT WEST RIVER STREET. WHISKEY ISLAND GOVERNMENT PIER and C. & P. R. R. SLIPS. Also STEAM LIGHTER—Equipped with Revolving Derrick and (100) two ton buckets.

Telephone 1608. Office, 130 West River St., CLEVELAND, OHIO.



## THE BUFFALO AUTOMATIC. A GRADING INJECTOR.

The movement of the steam and water valves and their relative positions are such that the supply of water will always be in proportion to the supply of steam admitted to the jets. CAN BE GRADED to run continuously on any steam pressure from 20 to 140 lbs. Operated entirely by one handle, both in stopping and starting, as well as in grading the supply of steam and water. Eagle Injectors, Duplex Tube Scrapers, Cylinder Oil Pumps Improved Glass Oil Cups and Lubricators Compression Grease Cups, Improved Ball Gauge Cocks, and other Steam Users' Specialties. Send for Catalogue, mentioning this paper.

**SHERWOOD MFG. CO.,** (Sole Mfrs.) BUFFALO, N.Y.

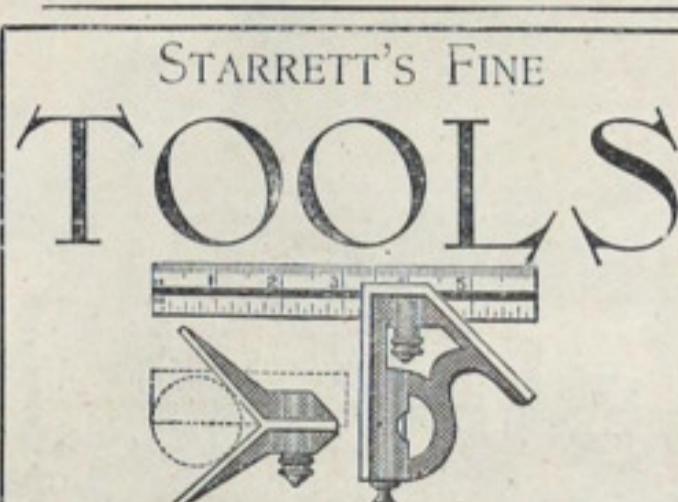
## Mc Kinnon Iron Works, Machinists, Engine Builders, Shipsmiths and Boiler Makers.

ASHTABULA HARBOR, O.

DEALERS IN Engineers' Supplies, Lubricating and Burning Oils, Steam, Deck and Suction Hose, and Air Pump Valves.

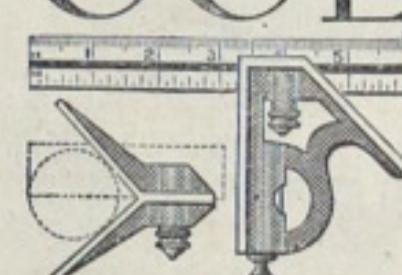
We carry Largest Stock of these goods to be found between Cleveland and Buffalo, and sell at the lowest price. We solicit your trade while at this port.

SEND ONE DOLLAR IN STAMPS TO THE MARINE REVIEW FOR TWENTY PHOTOTYPES AND GRAVURES OF LAKE STEAMERS NEATLY BOUND.



STARRETT'S FINE

# TOOLS



Skilled mechanics prefer them. Live dealers sell them. Send for Catalogue.  
**L.S. Starrett**  
ATHOL, MASS., U. S. A.

## KLING BROS. BOAT BUILDERS

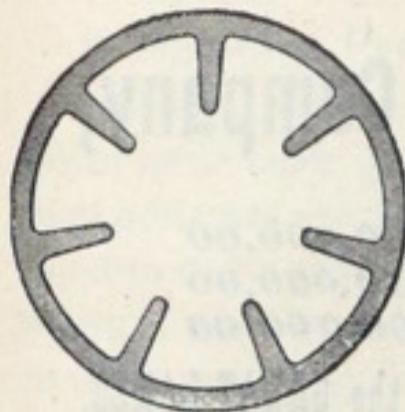
Hulls Iron or Steel up to 150 ft. in length.

## BOILER WORKS.

Dock 287 Hawthorne Av.  
CHICAGO, ILL.

# S. F. HODGE & CO.

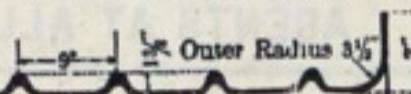
MARINE ENGINES,  
PROPELLER WHEELS,  
DECK HOISTERS,  
MARINE REPAIRS.  
320 ATWATER STREET,  
DETROIT, MICH.



## SERVE'S RIBBED STEEL BOILER AND STAY TUBES

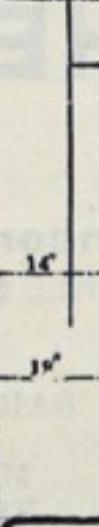
Show an average economy in fuel of 15 per cent. In steamers this means not only so much saving in cost of coal, but additional freight capacity.

Full Particulars on Application.



### Purves' Ribbed Steel Boiler Furnace Flues.

Nearly 10,000 Purves' Ribbed Steel Furnace Flues, of which this cut is a section, are in use in Marine Boilers. Besides having greater strength to resist collapse than any other furnace made, they possess many additional advantages which we shall be happy to enumerate on application.



**CHARLES W. WHITNEY,**

Representing Messrs. JOHN WILLIAMS & CO., Liverpool, sole agents for the U. S. and Canada.  
81 and 83 FULTON STREET, NEW YORK.

### LIFE-SAVING MATTRESSES.



THE ONLY MATTRESS made that is essential for steamship use; fitted with life-cords, each mattress becomes a LIFE PRESERVER and will hold up twenty persons in the water. They are also especially adapted for Steamships, Yachts, etc., as they are always pure and clean, never need renovating,

will not absorb moisture and cannot become infected with the germs of any contagious disease. Furthermore, they make the most comfortable bed in existence. Be sure you have your new vessels fitted entire with our goods. Write for catalogue and testimonial letters.

**IMPORTANT.**—We have just received official notice from the U. S. Government, that ships having our AIR MATTRESSES can carry so many less Life Preservers. Manufactured and sold only by

METROPOLITAN AIR GOODS CO., 7 Temple Place, Boston, Mass.

~~~ HORACE SEE, ~~~  
CONSULTING ENGINEER AND NAVAL ARCHITECT,  
ONE BROADWAY, NEW YORK.

### THE CONDIT FULLER CO.

CLEVELAND, OHIO.

**BAR IRON, SHEET IRON, PLATE IRON, PIC IRON,  
BOILER TUBES, BOILER RIVETS, PLATE STEEL,  
CLINCH RINGS, GAS PIPE, BOAT SPIKES,  
STEEL NAILS.**

**Sales Agents of  
THE CARBON STEEL CO.**

Manufacturers of  
OPEN HEARTH STEEL,  
SHIP PLATES, BOILER PLATES,  
ARCHES and STRAPS FOR VESSELS A SPECIALTY.

Write for Prices and List of Sizes.



**"WELLS LIGHT"**  
WALLWORK & WELLS' PATENTS.

**2000 CANDLE POWER!**

ESPECIALLY ADAPTED FOR

**Dry Docks and Night Loading.**

PORTABLE,  
ENTIRELY SELF-CONTAINED,  
REQUIRES NO OUTSIDE MOTIVE POWER,  
UNAFFECTED BY WEATHER,  
NO SPRAY, NO SMOKE, SAFE AND ECONOMICAL.  
IN USE ON 15 DRY DOCKS ON THE LAKES.

ALSO ADAPTED FOR  
Iron and Steel Heating.

For Hull and Boiler Plates,  
Tubes, Bending, Straightening  
and Laying Up Work.

For further particulars, address

**WILLIAM HALPIN,**

Successor to KEEGAN & HALPIN,

45 and 46 Washington St., NEW YORK.

### McMYLER MANUFACTURING CO., 180 COLUMBUS STREET, CLEVELAND, O.

SOLE MAKERS OF THE

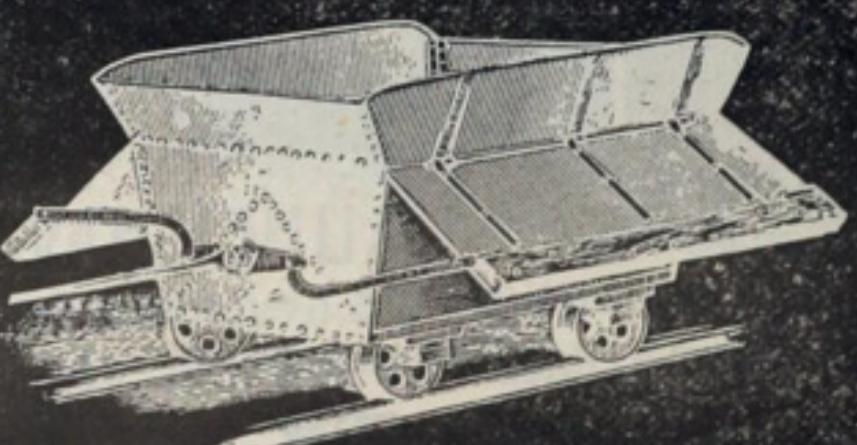
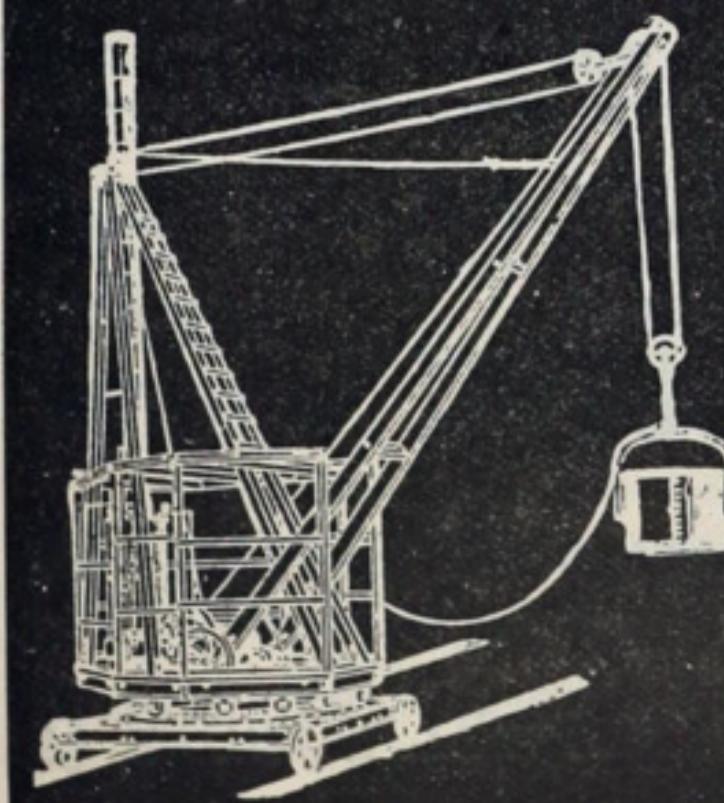
### McMYLER PATENT REVOLVING STEAM DERRICK

FOR HANDLING COAL, ORE AND COARSE FREIGHT  
OF ANY DESCRIPTION.

This Derrick can Lift Load, Alter the  
Radius of Boom, Swing in Either  
Direction at Will of Operator, and  
can Propel Itself on Track any De-  
sired Distance.

BUILT FOR ANY CAPACITY WANTED

BUILDERS OF  
CONVEYORS, COAL BUCKETS, ORE  
BUCKETS AND DUMP CARS.

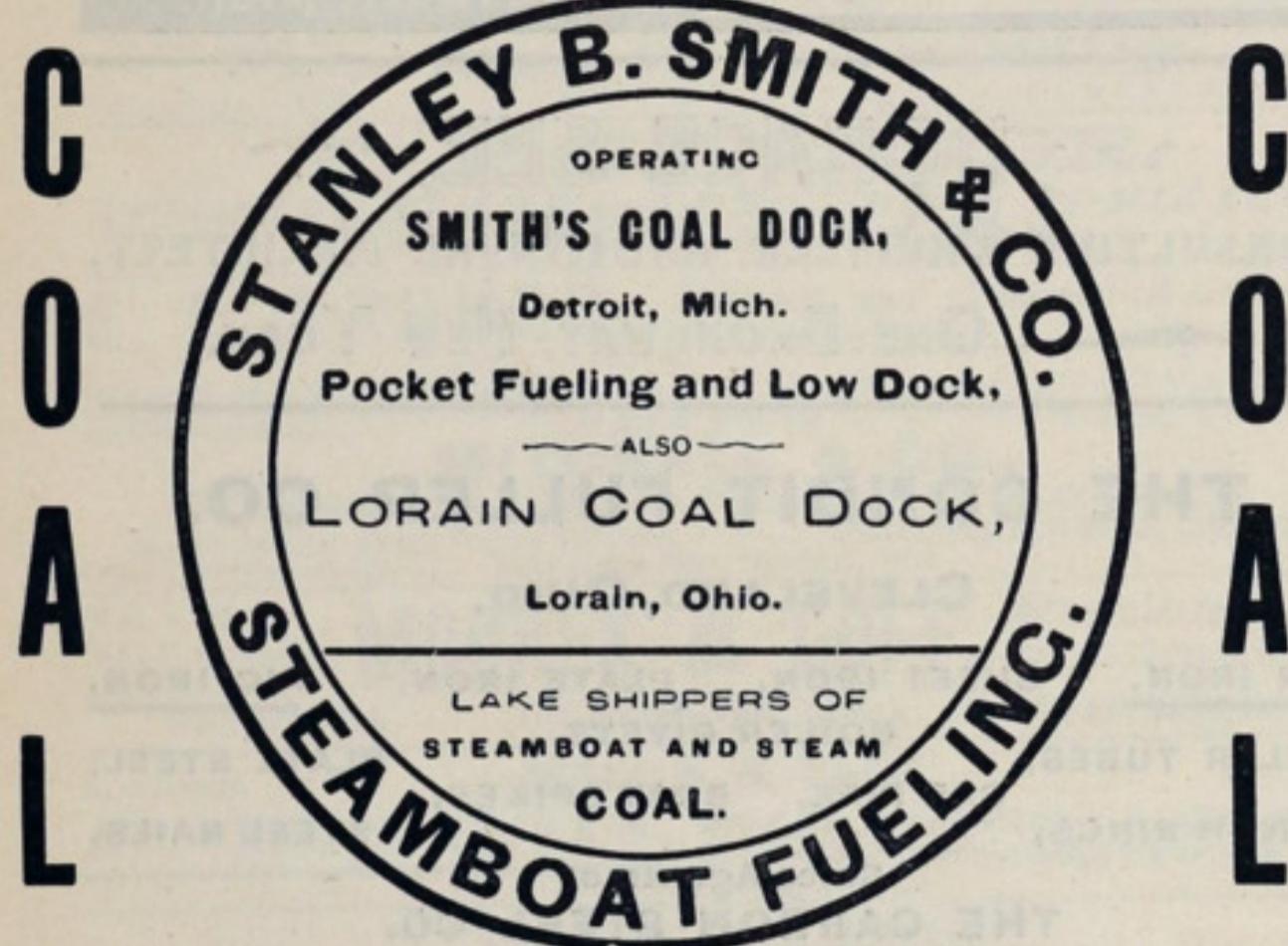


# STERLING, WELCH & CO.

12 and 14 Euclid Ave., CLEVELAND, O.

BOAT FURNISHING A SPECIALTY.  
CARPETS, OIL CLOTHS,  
CURTAINS, &c., &c.

Supplied at WHOLESALE RATES.



## The Martin-Barris Co.

IMPORTERS AND MANUFACTURERS OF

*Mahogany, White Mahogany,*

AND ALL NATIVE CABINET WOODS.

HIGH GRADES OF KILN DRIED WOODS FOR CABIN WORK AND INSIDE TRIM.

*White Oak Timbers and Plank*

CONSTANTLY ON HAND AND SAWED TO ORDER  
ON SHORT NOTICE.

654 Seneca Street,

Cleveland, Ohio.

INCORPORATED 1794.

## Insurance Company of North America.

CAPITAL, Paid up in Cash, - - \$3,000,000.00  
ASSETS, . - - - - 9,744,513.70

CHARLES PLATT, President.

EUGENE L. ELLISON, 2nd Vice-President.

JOHN H. ATWOOD, Assistant Secretary.

WILLIAM A. PLATT, Vice-President.

GREVILLE E. FRYER, Sec'y. & Treas.

GEORGE L. McCURDY, Manager.

CHICAGO, ILLS.

Lake Marine Department.

WARD BOILERS FOR STEAMERS  
LARGE OR SMALL  
LIGHT WEIGHT, GREAT POWER  
THREE TYPES  
LAUNCH, NAVY AND MARINE.  
ADOPTED BY U.S. GOVERNMENT AFTER THE MOST EXHAUSTIVE COMPETITIVE TESTS.  
CHARLES WARD,  
CHARLESTON, KANAWHA CO., W. VA.

DAVID WHITNEY, JR., President.

THE

F. H. WHITNEY, Secretary

## MICHIGAN

Fire and Marine Insurance Company,  
DETROIT, MICH.

|                         |               |
|-------------------------|---------------|
| CASH CAPITAL, - - - - - | \$ 400,000.00 |
| CASH ASSETS, - - - - -  | 840,000.00    |
| LOSSES PAID, - - - - -  | 1,800,000.00  |

THIS COMPANY DOES A GENERAL MARINE BUSINESS on the GREAT LAKES.  
AGENTS AT ALL PRINCIPAL LAKE PORTS.

## THE MARINE BANK CO.

CLEVELAND, OHIO.

CAPITAL, \$300,000.

Incorporated under the laws of Ohio in 1891.

Successor to E. B. HALE & CO., Established in 1852.

### DIRECTORS:

|                           |                               |
|---------------------------|-------------------------------|
| W. H. BARRISS, PRESIDENT. | HENRY C. RANNEY, VICE-PRES'T. |
| W. B. HALE, Cashier.      |                               |
| MARTYN BONNELL.           | C. E. BURKE.                  |
| THOS. FITZPATRICK.        | THOS. H. WHITE.               |

We give special attention to Marine Business.

### ALMY'S PATENT

### SECTIONAL WATER

### TUBE BOILER.

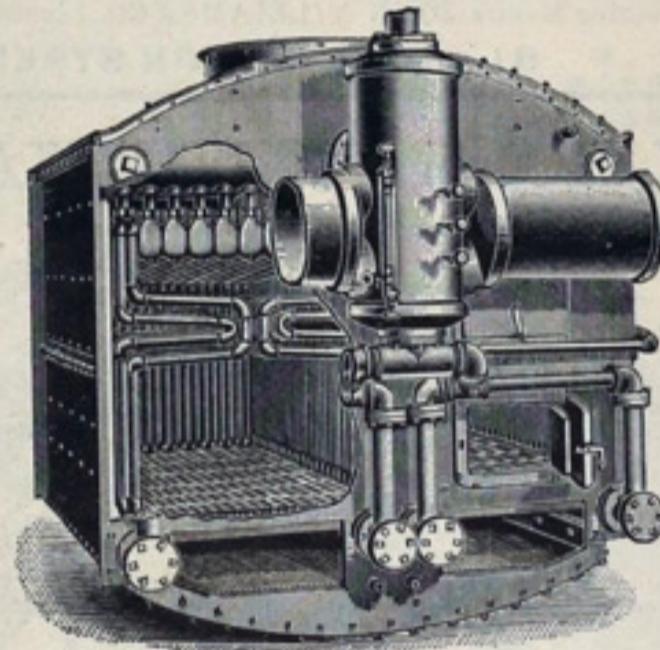
The Most Efficient and Reliable Water Tube Boiler on the Market.

is neither a copy nor an infringement of any other Boiler.

MANUFACTURED BY

The Almy Water Tube Boiler Co.

No. 47 CLIFFORD STREET,  
PROVIDENCE, R.I.



## W. W. LAWRENCE & CO.

PITTSBURGH, PA.,

Solicit the Orders and inquiries of large buyers of

WHITE LEAD, LINSEED OIL, COLORS, READY-MIXED PAINTS, VARNISHES and BRUSHES.

Possessing unsurpassed facilities for manufacturing, we can sell the best Paints at prices ordinarily asked by others for inferior qualities.

Catalogues, Prices, Color Cards, etc. Free on Application.

OFFICE AND WORKS: Water Street, below Penn Ave.

In Use  
on 600  
Lake  
Steamers.



IT HAS NO EQUAL!  
SO SAYS EVERY ENGINEER WHO HAS USED  
THE  
PENBERTHY AUTOMATIC  
INJECTOR.

SEND FOR OUR

CATALOGUE and PRICE LIST,  
Enclosing this Advertisement.

PENBERTHY INJECTOR CO.  
Detroit, Mich.